MAY 26 1907
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Rock Products

Concrete and Manufactured Building Materials

Vol. VI CHICAGO, ILLS., MAY 20, 1907 No. 12

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributers of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Acme" and "Electroid" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La.

Vulcan Steam Shovels

Are digging Cement Rock without blasting and loading it on cars for the Burt Portland Cement Co. of Bellevue, Mich., for less than 12 cents per cubic yard—and they are operating the shovels at only half capacity. How much is it cost, ing YOU? Better write today for information.

The Vulcan Iron Works Company, 129 Vulcan Place, Toledo, Ohio

UNION MINING COMPANY,

Manufacturers of the Celebrated

MOUNT SAVAGE FIRE BRICK GOVERNMENT STANDARD

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

Lime Kiln and Cement Kiln Construction

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

UNION MINING CO., Mount Savage, Md.

CAPACITY, 60,000 PER DAY. ESTABLISHED, 1841.

Northwestern Clay Mfg. Co.

New Windsor, Illinois.

J. O. FREEMAN, Genl. Mgr.

Sewer Pipe

An inquiry will be answered.

Drain Tile. Works: Griffin, Ill.

Ottawa Silica Co.'s Washed White Flint Sand

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

OTTAWA SILICA CO., . . Ottawa, Ill.

DEXTER Portland Cement THE NEW STANDARD

Sole Agents SAMUEL H. FRENCH & CO. Philadelphia

Phoenix Portland Cement UNEXCELLED FOR ALL USES.

Manufactured by

PHOENIX CEMENT CO.

NAZARETH, PA.

Sole Selling Agent WM. G. HARTRANFT CEMENT CO., Real Estate Trust Building PHILADELPHIA, PENNSYLVANIA

"RELIANCE" BELT ABSOLUTELY BEST

FOR GRIFFEN MILLS
FOR TUBE MILLS
FOR BALL MILLS

Chicago Belting Company

MAKERS

67-69 South Canal Street, SEND US YOUR SPECIFICATIONS. CHICAGO, ILL.

ALMA Portland Cement

STANDARD BRAND OF MIDDLE WEST.

Specially Adapted to all Reinforced Concrete and High-Class Work.

Alma Cement Co., WELLSTON, OHIO

Binns Stucco Retarder Co.

UHRICHSVILLE, OHIO

The largest manufacturer of retarder in the world. Write us for prices.

BAGS FOR LIME AND CEMENT

We have recently purchased the factory of the Toledo Paper Bag Co. and have tripled the capacity, and are now in position to make prompt shipment of all orders with the best quality of paper.

Prices quoted and samples mailed on receipt of inquiry.

The Urschel-Bates Valve Bag Co. Toledo, Ohio

Improved Shield Cement

The Best Natural Cement With 3 parts sand—425 lbs. 1 year. Economical for Concrete.

LAWRENCE CEMENT CO. OF PENNA.

SIEGFRIED, PA. PAMPHLET FREE.

SEND FOR BOOKLET

MARQUETTE PORTLAND CEMENT

THE SIDE WALLS BRAND

MARQUETTE PORTLAND CEMENT

Gives Absolute Satisfaction for All Kinds of Concrete Work.

MARQUETTE CEMENT MANUFACTURING CO.,

MILLS: LA SALLE, ILL. SALES DEPARTMENT: MARQUETTE BLDG., CHICAGO.

The Universal Portland Cement Co.

ANNOUNCE the removal of their general offices, on May 1st, to the 14th floor, Commercial National Bank Building, Chicago, Illinois. Also the establishment of Pittsburg offices in the Frick Building, Pittsburg, Pa.

Treatise on Water-Proof Concrete and Portland Cement Lime Mortars.

A new pamphlet just issued containing important tensile and permeability tests.

MAILED ON REQUEST.

CHARLES WARNER COMPANY

Land Title Building, Philadelphia, Pa. Wilmington, Del.

"LEHIGH" PORTLAND CEMENT

High Tensile Strength, Finely Ground, Light and Uniform in Color.

MANUFACTURED BY THE

Lehigh Portland Cement Co.

ALLENTOWN, PA

Western Office:
Commercial Bank Building,
CLEVELAND, OHIO.

Write for Catalogue.

Capacity, 8,000,000 Yearly.

ST. LOUIS PORTLAND CEMENT COMPANY.

RED RING ST. LOUIS BRAND

Manufacturers: Sales Office, Holland Building, St. Louis.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated "Buckeye" brand of

Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever.

WE INVITE YOUR CORRESPONDENCE.

Bellefontaine, Ohio.

ONE GRADE—ONE BRAND.

The Recognized Standard American Brand.

General Offices: EASTON, PA.

SALES OFFICES:

German National Bk. Bldg., PITTSBURGH.
Builders Exchange, BALTIMORE.
Marquette Building, CHICAGO.
Builders Exchange, BUFFALO.
Board of Trade Bldg., BOSTON.
St. Paul Bldg., NEW YORK.
Harrison Building, PHILADELPHIA.

Chicago Portland Cement Co.

MANUFACTURER OF . . .

"CHICAGO AA" PORTLAND CEMENT.

We make one brand only. The best that can be made.

HYDRATED PORTLAND LIME

IS IDEAL FOR

Waterproofing Concrete Blocks

SAVES MONEY. TRY IT.

FOR INFORMATION AND PRICES, WRITE

CHICKAMAUGA CEMENT CO.,

Sole Manufacturers. CHATTANOOGA, TENNESSEE

Rock Products

Concrete and Manufactured Building Materials

Volume VI. CHICAGO, ILL., MAY 20, 1907. Number 12.

FORTY-SIX STORIES HIGH

Singer Building Foundations Forced 90 Feet Down to Bed Rock. Calculated to Carry 90,000,000 Pounds of Superstructure.

By Maurice Deutsch, C. E.

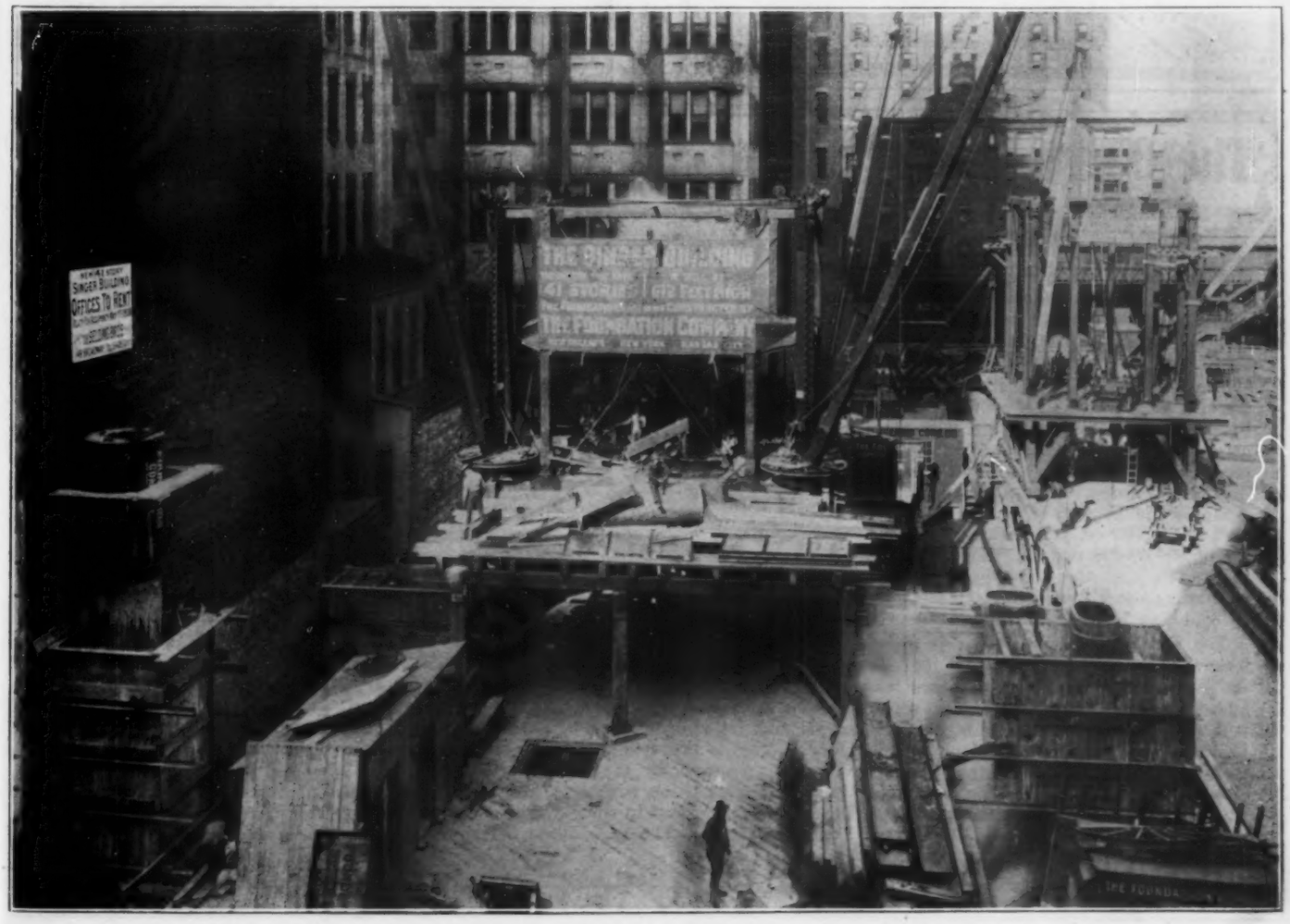
The tall, sky-reaching buildings of New York, their spaciousness, their picturesque and startling uplift toward the blue heavens above, are perhaps the first and most striking points to the visitor at that great city.

Possibly their great mass may not at first suggest their enormous weight, but this weight renders the problem of constructing their foundations in reality one of the most complicated and interesting that arises in the vast field of building in this immense and ever growing American metropolis. Thus, in the construction of many of the skyscrapers in the borough of Manhattan, especially in the southern end of the island where the soil is treacherous and bedrock far below the present curb level, very serious foundation questions have arisen from time to time.

If the actual weight in pounds of any specified and well-known building were set down here in cold type, the figures would look somewhat like the data of an astronomer working out the distances of the fixed stars from the earth. The tons of weight of one of these giant structures confined to a few city lots are more than the mind of the average layman could conjure.

To hold this weight securely and continue to hold the same indefinitely in the future; to protect the adjoining landed property with its improvements; to provide against settling and the manifold dangers incident upon the interjection of a gigantic structure into the midst of a mass of older constructions, and to excavate mammoth holes under populous city

Continued on Page 26.



CONCRETE OPERATIONS UPON THE FOUNDATION FOR THE SINGER BUILDING IN NEW YORK. THE FOUNDATION CO., CONTRACTORS.

Strength Durability Permanence

Not only laboratory tests, but results in actual work prove the high grade quality of

Northampton Portland Cement

Especially adapted for Cement Blocks, Sidewalks, and all forms of concrete and re-inforced concrete construction.

Northampton Portland Cement Co.

No. 1 Madison Ave., NEW YORK.

Works at Stockertown, Pa.

Reputation Unrivalled

ONE BRAND ONLY
Sound, Strong, Uniform

TRADE MARK
VULCANITE PORTLAND CEMENT
MANUFACTURED BY VULCANITE PORTLAND CEMENT CO. NEW YORK & PHILADELPHIA
REG. U.S. PAT. OFFICE

ONE OF THE OLDEST AND THE BEST.

Vulcanite Portland Cement Co.

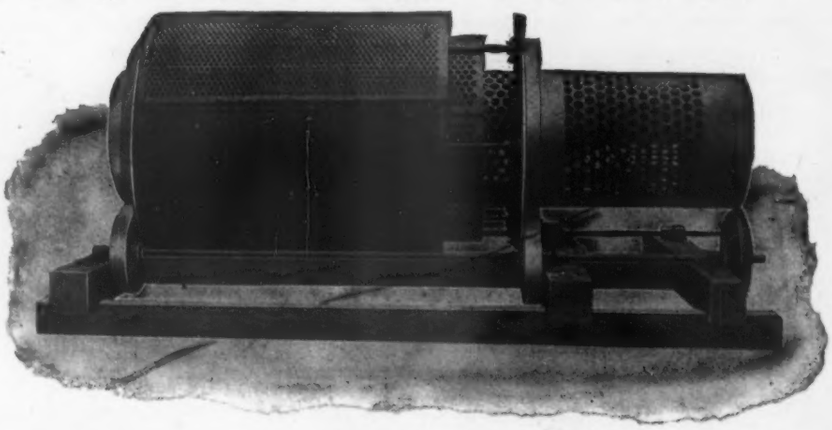
Flatiron Bldg., New York. Land Title Bldg., Philadelphia.

The O'Laughlin Revolving Screen

For Granite, Stone, Sand, Gravel, Coal, Coke or anything requiring separation.

THE principle of separating is exactly opposite that of the older style revolving screen, the materials being discharged on coarse perforations first. The coarse material is immediately separated from the finer in each of the concentric screens to the different required sizes.

The type of screen here illustrated is in use at a No. 8 Crushing plant for limestone (which was formerly equipped with three of the older style screens and required an outlay of $350.00 for each 100,000 cu. yds. of stone separated. Up to the present time it has made perfect separation into five sizes of 300,000 cu. yds. with a recent outlay of $27.00 for renewing the portion of the screen that the stone has been discharged on, and should do as much more without any additional outlay.



The inside or longest screen is 8 feet long and 36 inches in diameter, the next concentric screen is 7 feet 6 inches long and 48 inches in diameter, the next screen is 7 feet long and 58 inches in diameter, the next is 6 feet 6 inches long and 66 inches in diameter. With the exception of the inner screen each section is adjustable and the screen is complete without it. The figures given above give 492 sq. ft. of screen surface which is equal to 3 screens of the old pattern, 14 feet long and 36 inches in diameter.

We claim it requires but one-fifth the power to operate our screen than the old style and yet it does the same amount of work. This is proven first, by the length of screen; second, by the size of driving pinion in comparison with gear; third, by the size of trunnions in comparison to the tread of screen. The material to be separated and weight of screen rests above the bearing points. While in the old style screen it is below the center of bearing points. The material being immediately separated by dropping into each of the concentric screens reducing the wear on screens to the minimum.

Let us know your requirements, what materials you wish separated, the amount daily and the different sizes, and we will furnish an estimate as to cost, power required, etc.

JOHN O'LAUGHLIN, - - - RACINE, WIS.

? THE IMPORTANT QUESTION

A RELIABLE PAPER BAG

THAT will stand severe handling, and arrive at destination without damaged contents, has been the one desire of the cement and hydrated lime manufacturer. We have solved the problem and can convince you with the first order.

The West Jersey Paper Mfg. Co.

Front and Elm Streets CAMDEN, N. J.

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building,

GRAND RAPIDS, MICH.

Write us for prices. Send us your orders

Improved Utica Hydraulic Cement

The finest ground and highest grade Natural Cement manufactured in the U. S. Every car tested by Robt. W. Hunt & Co., and their test furnished on every car shipped.

MEACHAM & WRIGHT CO. Sole Agents, Chicago.

BANNER CEMENT CO.,

MAKERS OF THE FAMOUS BANNER BRAND OF

LOUISVILLE CEMENT.

Guaranteed that 90 per cent. will pass a ten thousand Mesh Sieve.

WE SELL TO DEALERS ONLY.

GENERAL OFFICE: MASONIC TEMPLE, CHICAGO, ILL.

Quality Stone Produces Profit

The use of White Portland Cement with **marble dust**, crushed light colored stone or white sand will give you a concrete of **exceptional beauty** and strength. If you want to **put quality** into your work and make it stand up under the most careful investigation and **surpass all others in beauty of appearance** you should use **White Portland Cement**. Guaranteed to equal any high grade Portland Cement in strength and durability, and pass every test specification for Portland Cement. Unexcelled for all kinds of ornamental work, porch columns, sills and coping, monuments, floors and steps, for facing for concrete blocks, bridges, reinforced or other monolithic work. **Price, $1.25 per bag of 100 lbs. Marble Dust, $1.60 per bbl. of 400 lbs.**

J. E. BARTLETT COMPANY, - - Jackson, Mich.

EDISON

Portland Cement Co.

TRADE Thomas A. Edison MARK

EDISON PORTLAND CEMENT COMPANY NEW VILLAGE, N. J.

85 per cent. thru 200
98 per cent. thru 100

The Finest Ground Portland Cement Manufactured

"Neat tests are of less value than those of the briquettes made with sand and cement. **The fineness of the cement is important, for the finer it is the more sand can be used with it.**"

[Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.]

FINE GRINDING OF

PORTLAND CEMENT

AND WHAT IT MEANS

For a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 per cent to 90 per cent through a 200 mesh screen. This ground material passes through kilns and comes out in clinker. This is ground and **that part of this finely ground clinker that will pass a 200 mesh screen is cement;** the residue is still clinker. These coarse particles or clinkers will absorb water very slowly, are practically inert, and have very feeble cementing properties. **The residue on a 100 mesh screen is useless.**

Edison Portland Cement is ground 85 per cent through a 200 mesh screen,—10 per cent finer than other brands. This can be verified in any laboratory.

In a barrel of Edison Portland Cement, therefore, you get 85 per cent of Portland Cement and 15 per cent of clinker. In a barrel of other brands you get 75 per cent of cement and 25 per cent of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent of slate, or would you prefer the coal containing but 15 per cent of slate?

If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent more units of iron?

Another point is worth considering and that is that the Edison Portland Cement Company make but one brand or quality, and that is the best.

SALES OFFICES:

Real Estate Trust Bldg., Philadelphia. St. James Bldg., New York.
Machesney Bldg., Pittsburgh. Union Bldg., Newark, N. J.

Tell 'em you saw it in ROCK PRODUCTS.

THE REASON WHY

Amatite ROOFING Needs No Paint—

The enlarged diagram above tells the story.

If you examine it you will notice that it is composed of five different layers.

In fact, Amatite is made on a different principle from any other roofing. Instead of a smooth skin coating *made to receive a coat of paint*, Amatite has a rough surface of small particles of hard silicious rock, such as seen in quartz or other hard stone, when examined under a microscope.

This mineral surface is chosen for its weather-resisting qualities, and does away *absolutely* with *painting* and *coating*.

Underneath the mineral surface are alternate layers of long-fibre, wood-stock felt of the best grade, and between each sheet and under the mineral surface on the top is a layer of a specially prepared Coal Tar Pitch, *the greatest waterproofing material known*.

This short description will give you some idea of how carefully Amatite is constructed and what effective protection it will give against weather of all kinds.

FREE SAMPLE

The best proof, however, is to see a Sample, which we will send to any one free upon receipt of name and address. Write to nearest office.

Barrett Manufacturing Co.

New York Chicago Cleveland Allegheny Kansas City
St. Louis Boston Minneapolis Philadelphia
New Orleans Cincinnati London, Eng.

WUNNER'S BITUMEN EMULSION

Is a thick black fluid a **perfect waterproofing** which has given 8 years entire satisfaction in Germany and has the endorsement there of the highest Government officials.—It is now introduced for the first time in the U. S. When correctly applied (used in small quantities with first class cement and sand) **Bitumen Emulsion will make any wall absolutely watertight and dry against any waterpressure.**

Full particulars upon application.

Agents Wanted

THEODORE F. KOCH

Importer and Exclusive Agent for U. S. of A.

79 Dearborn St., Suite 1025-27, Chicago, Ill. 801 Globe Bldg., St. Paul, Minn.

Louisville Hydraulic Cement

is especially adapted for use in all classes of masonry construction and concrete foundations, and for all purposes where large masses of mortar or concrete are not exposed to the weather.

Ask for "*Some Recent Tests*," our latest booklet. You will find it interesting if you use cement.

Western Cement Co., Inc., 281 W. Main St., Louisville, Ky.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner Brand Louisville Cement, Portland Cements and Building Materials.

St. Louis, Mo.

PENNSYLVANIA CEMENT COMPANY PORTLAND PENNSYLVANIA CEMENT 26 CORTLANDT ST. N.Y.

Pennsylvania Portland

UNEQUALLED FOR HIGH CLASS CONCRETE WORK

Pennsylvania Cement Co.

26 CORTLANDT ST., NEW YORK

PENNSYLVANIA CEMENT COMPANY PORTLAND PENNSYLVANIA CEMENT 26 CORTLANDT ST. N.Y.

Tell 'em you saw it in ROCK PRODUCTS.

Gravity Freight Carriers, Conveyors and Portable Automatic Elevators

Watertown, S. D.
Feb. 24, 1907.
MATHEWS GRAVITY CARRIER CO.
St. Paul, Minn.

Gentlemen:—Reporting per your request on the Gravity Carrier purchased by us from you some weeks ago for use in our factory here, we take pleasure in saying that it is in every way more satisfactory than you recommended it would be.

It saves fully 80% of the expense in handling the blocks and brick.

We would not let it be taken out at any price, if we could not get another.

Yours truly,
STOVER CONSTRUCTION CO.
Per Lee Stover.

Mathews Gravity Carrier Co.

Merriam Park, (St. Paul) Minn.

PATENT SOAPSTONE FINISH

PLAIN AND IN COLORS FOR WALLS AND CEILINGS.

Patent Soapstone Mortar.

Prepared in any Color for Laying Pressed and Enameled Brick, Stone Fronts, Terra Cotta, Chimneys, Fire Places, Etc.

The Dodge Blackboard Material or Artificial Slate.

The Potter Blackboard Material.

SOAPSTONE MICA. CONCRETE DRESSING.
CRUSHED, GROUND AND BOLTED SOAPSTONE.

AMERICAN SOAPSTONE FINISH CO.
C. P. DODGE, Proprietor. **CHESTER DEPOT, VT.**

IT IS BETTER

to be master of one trade than Jack of all trades. We are masters in the manufacture of Nuttall cut or planed gears, we do nothing else.

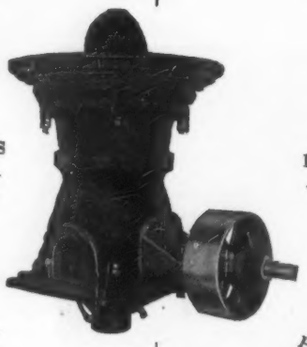
R. D. Nuttall Co.,
Pittsburg, Pa.

McCully Gyratory Crushers — You See Them Everywhere

LARGEST CAPACITY

COOL RUNNING

TOP SUSPENSION OF SHAFT



NO SHUTDOWNS FOR REPAIRS

REQUIRE LEAST POWER

STEEL GEARS

BOTTOM DROP

PERFECT OILING DEVICES

(Write for Catalog No. 4.)

Power and Mining Machinery Co. — Cudahy, Wis. (SUBURB OF MILWAUKEE)

Economy Dictates

that the jaw-plates, cheek-plates, cones and concaves of your crushers should be made of

"Taylor-Made" Manganese Steel "Taylor-Made"

The actual ratio of wear in "Taylor-Made" plates, as compared with other castings, has been proved by large users in hundreds of cases to warrant their use.

"The Reason's in the Steel"

We shall be pleased to give you further information.

Taylor Iron & Steel Co.
High Bridge, N. J.

Works at KOPPEL
P. O. Address, HOMEWOOD
Beaver County, PA.
Trade-Mark.

COMPLETE INDUSTRIAL

Railway Equipments

For the Clay Worker, Brickmaker, Cement Worker, Mines and Quarries.

Write for

Catalog No. 37

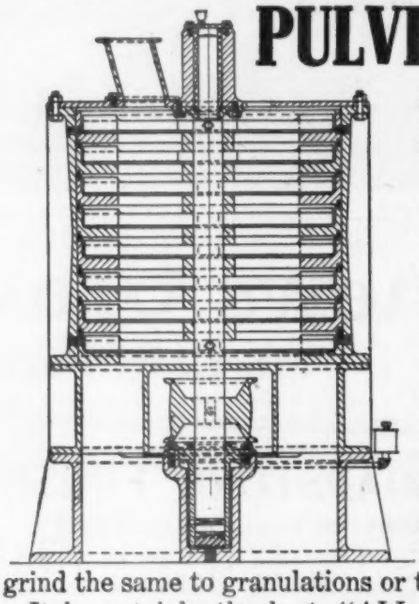
IN STOCK

Rails, Steel Ties, Portable Track, Switches, Frogs, Crossings, Steel Dump Cars, Flat Cars, Turntables, etc.

ARTHUR KOPPEL COMPANY

66-68 Broad Street, New York. 1639 Monadnock Block, Chicago.
53 Oliver Street, Boston. Machesney Bldg., Pittsburg, Pa.
Chronicle Building, San Francisco.

PULVERATORS



The accompanying cut shows our No. 4 PULVERATOR which was designed to reach the largest scope of what is required in the grinding of any kind of material from Glue and Bones to ROCKS of any kind.

This mill will take in pieces as large as a man's fist and can be regulated to grind the same to granulations or to a powder.

It is certainly the best "ALL-AROUND" mill in the market.

Please write for further information and our latest illustrated catalogue.

J. R. ALSING CO., Engineers and Manufacturers

Main Office; 136 Liberty Street. NEW YORK

LION FUZES
AND
BLASTING MACHINES
ARE THE BEST

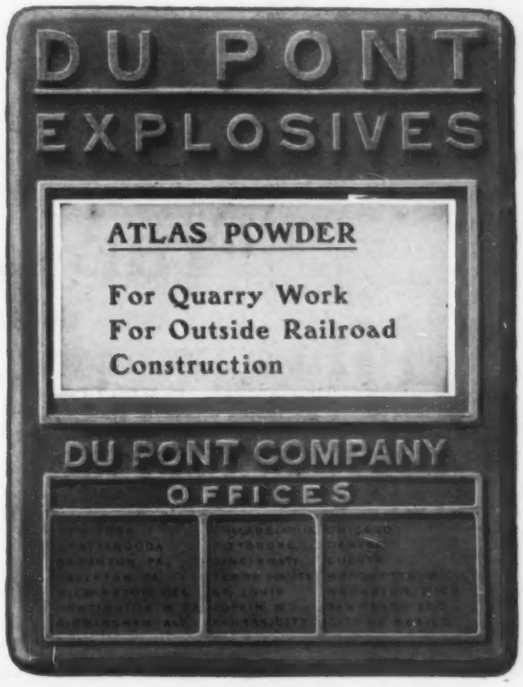
No. 1, Capacity, 8 Holes
No. 3, Capacity, 25 Holes
No. 4, Capacity, 50 Holes

If you do not fire your blasts by electricity, you should send for the booklet

"FIRING BLASTS BY ELECTRICITY"

Which tells all about this method. If you are already using fuzes, you should have the book anyhow, as it contains many valuable hints. Sent free.

The AETNA POWDER COMPANY
143 Dearborn Street, CHICAGO



ROCK DRILLS
THE "SERGEANT" AND RAND "LITTLE GIANT"
(Independent Valve) (Tappet Valve)

The World's Standard of Rock Drill Excellence.

POWER ECONOMY—The valve movement of Ingersoll-Rand drills gives the quickest admission, the freest exhaust and the least wear and leakage, meaning higher speed, a harder blow and a greater depth of hole drilled per cubic foot of air used than any other drill.

REPAIR ECONOMY—The use of selected metals, the oil-treating of steel parts and the applied experience of thirty-seven years of drill building give Ingersoll-Rand drills an unequaled endurance and a repair economy unapproached by any other drill.

INGERSOLL-RAND CO.
11 Broadway, NEW YORK.

One of 175 Ingersoll Rand Drills at work on the Panama Canal. Nine Ingersoll-Rand Air Compressors are also used on this work.

Chicago, Cleveland, Birmingham, Philadelphia, Houghton, Mich., Los Angeles, El Paso, Boston, Denver, St. Louis, Seattle, Montreal, Pittsburg, San Francisco, Vancouver, Butte, Salt Lake, Toronto

P-23

HIGH GRADE
FIRE BRICK
For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description

Louisville Fire Brick Works, K. B. GRAHN, Prop., Highland Park, Ky. P.O.

HENRY S. SPACKMAN ENGINEERING CO.
Official Chemists, National Association of Manufacturers of Sand Lime Brick.
HENRY S. SPACKMAN, Pres. Dr. E. W. LAZELL, Vice Pres.
H. O. DUERR, Consulting Engineer.

Lime and Sand-Lime-Brick plants designed, constructed and superintended. Established plants examined and improved. Properties investigated and Physical and Chemical reports made. Chemical and Physical reports of all building material a specialty.

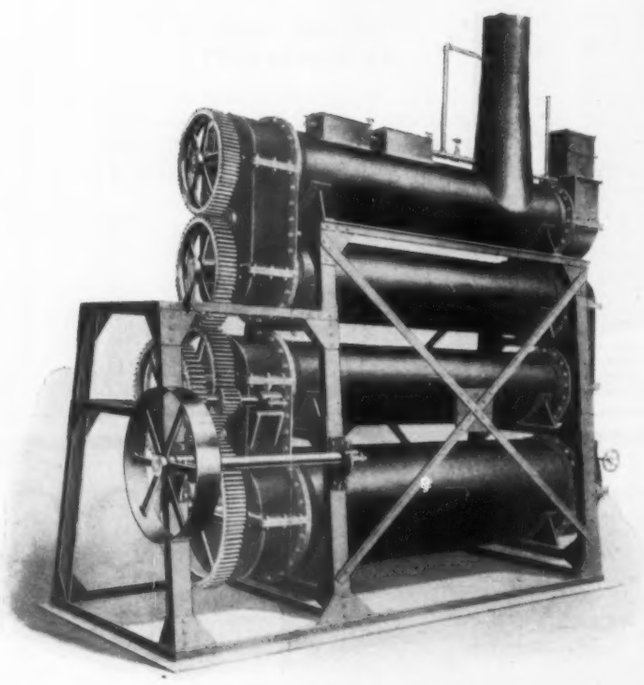
Office and Laboratories, 42 N. Sixteenth St. PHILADELPHIA, PA.

Hydrate Your Lime

"THE KRITZER WAY"

WE'LL be glad to tell you all about it. It won't cost you more than a postage stamp to find out. The man who never investigates new things never accomplishes much in this world. It's the man who is up and doing and gets there before everybody else does—he's the man who reaps the harvest. There will always be money in hydrated lime, because hydrated lime is as staple as flour; but the men who get into the field early are the men who are going to get the BULK of the trade.

We are makers of machinery for hydrating lime. We will furnish you anything from a sprocket wheel to a complete plant, and guarantee whatever you get from us to be the best of its kind in the country. We have the most up-to-date and successful method. Our machinery is tried and tested, and we've had more real experience in this business than all our competitors put together. That's a broad statement, eh? Well, we can prove it. You can't afford to wait. Write now.



KRITZER CONTINUOUS HYDRATOR

Ask for our Little Book

The Kritzer Company

Western Ave. and 17th St.

CHICAGO, ILL.

Tell 'em you saw it in ROCK PRODUCTS.

WHY?

Why are the Palmer Lime & Cement Co.'s Limes in demand?
Why are they used in all principal buildings in New York, Brooklyn and neighboring cities?
Because they are the **best.**
Best for **finishing.**
Best for **brick** and **stone work.**
For finishing, because they will **not** pit, will **not follow** the trowel, and work **smooth** and **clean.**
For **brick** and **stone,** because they are strong, large yielders, and will lay **more** brick per barrel than any other lime on the market, therefore they are cheaper for the mason's use.

We are Sole Distributers of the—

Cheshire finishing lime, which is well known and always A 1.
Bellefonte Lime, a highly caustic chemical lime, and a large yielder for brick work, making a bond almost equal to cement mortar.
Palmer select finishing, fully guaranteed.
Palmer No. 1 common, high grade for brown and scratch coats.
Yorktown Heights lime
Connecticut White lime
Hoosac Valley lime
Hadsell White lime
} Especially adapted to brown and scratch coats.

And—

Palmer Chemical Lime, which has a universal reputation, analyzing over 99 per cent Pure Carbonate.
Alsen's American Portland Cement, for Long Island.
We **succeed** in pleasing our customers.

The Palmer Lime & Cement Co.

FOSTER F. COMSTOCK, Manager

Telephone 6610, 6611, 6612 Cortlandt. 149 Broadway, NEW YORK CITY

"Selling all the Lump Lime we can make"

(*From some Correspondents*)

Well, so 'is the other fellow but—this is no argument in favor of "Lump" over Hydrate.

It's simply because the "building boom" NOW demands every pound that can be turned out and "you're only getting your share" while the boom is on.

Now then—while EVERYBODY WANTS LIME why not begin to give them a better article and make a MUCH LARGER PROFIT? (The time to make the largest profits is when the public wants your stuff.)

"Selling all the Hydrated Lime we can Produce"

(*From our Customers*)

and producing all the time instead of shutting down in dull seasons and, (pound for pound) making 20% MORE PROFIT.

Hydrating changes your lime from a perishable to an IMPERISHABLE PRODUCT, which can be stored or shipped any distance without trouble, only freight rates limit your shipping distance.

The number of possible customers is greatly increased because there are so many uses for Hydrate besides the regular lines.

✦

If you know all about HYDRATE, it's time to buy a CLYDE HYDRATING PLANT.

If you don't know all about it, let us tell you a few more facts.

"*We like to answer questions.*"

Anyway get our "booklet" and take up this important matter with us—the pioneers who built almost every one of the plants now in successful operation. We are in a position to take up your order for prompt accommodation now.

CLYDE IRON WORKS

Manufacturers DULUTH, MINN.

OUR HIGH GRADE PRODUCTS

Largest Capacity of Hydrated Lime in the United States.

Woodville White Lime Company, TOLEDO, OHIO.

Big B Lime

BIG B LIME

ITS HISTORY IS A STORY OF SUCCESS

The Building Trades' Barometer. The Iron and Steel industry promises increased activity. It is predicted that a new tonnage record in that business will be established.

This means a large demand for LIME, and transportation facilities taxed. Isn't it wise to arrange early for your supply of LIME?

BIG B's quality is unsurpassed. That means satisfied and contented contractors for you. Our quick shipping facilities mean fresh lime on short notice.

A POSTAL CARD WILL BRING OUR 1905 MEMORANDUM BOOK

THE NORRIS AND CHRISTIAN STONE AND LIME CO.

MARION, OHIO

Gas Producer Plant of the New England Lime Co., Canaan, Connecticut.

PRODUCER GAS Makes the Best Lime It increases the Capacity of a Plant and Reduces the Fuel Bill

The Total Cost of This Installation Will be Paid for by the Saving Effected During the First Year of Operation

"We have equipped two plants for above company and are now equipping a third."

MORGAN CONSTRUCTION CO., Gas Producer Dept., Worcester, Mass.

CEMENT-KILNS

Lined with Our BAUXITE Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile
Fire Proofing, Flue Lining.

Laclede Fire-Brick Manufacturing Co.

ST. LOUIS, MO.

The Hoosac Valley Lime & Marble Co.

ADAMS, MASS.

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

THOS. D. CONNORS, President. Telephone Connection New York Office: 1123 Broadway.

The Ohio and Western Lime Company,

WORKS AT
Fostoria, Ohio.
Gibsonburg, Ohio.
Sugar Ridge, Ohio.
Tiffin, Ohio.
Huntington, Indiana.
Geneva, Ohio.
Limestone, Ohio.
Lime City, Ohio.
Portage, Ohio.

MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio White Finishing Lime, Ground Lime, Lump Lime, Fertilizer, Hydrate Lime, Cement, Plaster, Hair, &c., &c.

Capacity 8000 Barrels Per Day.

Offices: TOLEDO, O. 209-210-211 Chamber Commerce Bldg. HUNTINGTON, IND.

"IF IT IS LIME WE MAKE IT."

Lump - Barreled - Hydrated Ground.

STRONGEST IN OHIO.

We are not connected with any Trust or Combination.

WRITE US PHONE US The Scioto Lime and Stone Company, Delaware, Ohio

DOES NOT DETERIORATE WITH AGE.

EXCELSIOR HYDRATED LIME
The Cleveland Builder's Supply Co.
CLEVELAND OHIO

WILL NOT SLACK. ALWAYS READY FOR USE.

Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

SEND FOR PRICES.

MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

WRITE FOR PRICES

THE LARGEST LIME MANUFACTURERS IN THE WORLD.

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND. RIDGEVILLE, IND. PORTLAND, IND.

LIME KILNS AT PORTLAND, IND.

General Office: 17 N. Penn. Street INDIANAPOLIS

The

Strongest White Lime

ON THE MARKET

Uniform Quality — Finest Grain

The American Clay Machinery Co.
WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.,
Mitchell, Ind.

Dear Sirs:-

Replying further to your favor of the 8th inst requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime hydrated easily and the brick made from it were first-class in every respect.

We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co. and he can probably advise you further.

Very truly yours,
The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

ASH GROVE
WHITE LIME ASSOCIATION
MANUFACTURERS OF
High Grade White Lime.
KANSAS CITY, MISSOURI.

WESTERN LIME CO.

HUNTINGTON, INDIANA
MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

Tell 'em you saw it in ROCK PRODUCTS.

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

HIGH GRADE FINISHING WORK

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The Bates Engineering and Construction Co.

DESIGNERS AND BUILDERS OF

Lime Kilns and Complete Lime Plants

Plans and estimates furnished for coal, wood or producer gas kilns. Designers and builders of the only known kiln that will burn a soft stone economically. Sixteen years' experience. Contracts taken in any part of the country. :: :: :: ::

OFFICE: GREAT BARRINGTON, MASSACHUSETTS.

Modern Grinding Machinery

KOMINUTERS for granulating
TUBEMILLS for pulverizing

Davidsen Tubemill especially adapted for Sand-Lime Brick Work.

Silex Linings for Tubemills
Best Quality Dana Flint Pebbles
Forged Steel Balls

F. L. SMIDTH & CO.

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MASONS' SUPPLY DEPOT.

Manufacturers of, and Wholesale Dealers in

Snow Flake Lime, Cement Building Blocks, Alpha Portland Cement, Hoffman Rosendale Cement, Cummings Akron Cement, Kings Windsor Wall Plaster, Kings Plaster Paris, Fire Brick, Fire Clay, Dynamite, Caps, Exploders, etc.

Rockland-Rockport Lime

IS BETTER THAN THE BEST

That's the reason we sold over 60 per cent of the lime consumed in New York City last year. Quality—in sand capacity, hard walls, white finish. Economical—from start to finish.

ROCKLAND - ROCKPORT LIME CO.
FULLER BUILDING, NEW YORK.

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MACHINERY

FOR

Industrial Plants

We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

Catalogue No. 28.

H. W. Caldwell & Son Co.

17th St. and Western Ave., Chicago

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Woodward, Wight & Co., Ltd., New Orleans, La.

STURTEVANT GRINDING MILLS

SIX KINDS

FOR

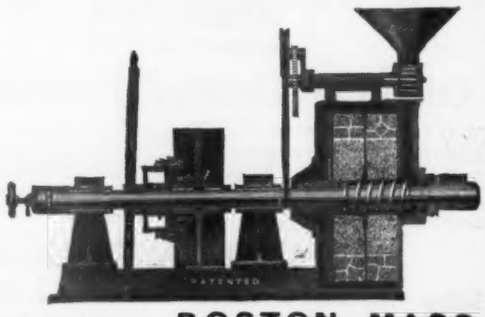
Hard, Soft or Medium Rock.

Produce a finished product without screens.

SEND FOR CATALOGUE

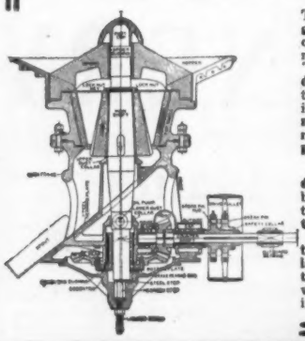
OF

ROCK AND ORE REDUCING MACHINERY.



STURTEVANT MILL COMPANY 105 CLAYTON STREET. BOSTON, MASS.

THE AUSTIN GYRATORY CRUSHER IS THE ONLY ONE HAVING AN AUTOMATIC OILING SYSTEM.



The **strain** on the **bearings** of a gyratory crusher is so great that if **dust** reaches them or if **imperfectly** lubricated they are certain to be quickly destroyed and the machine laid up for repairs. The bearings of the "Austin" are enclosed in a **double** chamber—**absolutely dust proof**—and are lubricated by a constant circulation of **live** oil forced through the main **eccentric** bearing—which is the life of the machine—by an **automatic** pump operated directly by the gyratory movement of the main shaft. The lubrication must be **perfect** because the flow of oil is **constant** and **positive.**

In all other gyratory crushers there is only the **discharge** diaphragm to separate the **dust** from the bearings and gears, and a side door opens directly into the chamber containing the **bearings.** Dust gets into this receptacle readily and destroys the **gears.**

Immediately below the crushing head, in the "Austin" is placed the discharge diaphragm with dust collar the same as in any other gyratory crusher. Below this partition is a **second** diaphragm also provided with dust collar around the shaft and a dust cap covering the pinion, contained in no other crusher, enclosing the bearings in a **double dust proof** chamber and making it **simply impossible** for dust to reach the bearings.

At the bottom of the frame in the "Austin" is an **oil cellar** which is filled with oil to the level of the center of teeth in the main gear.

An **automatic** pump draws **pure oil** from this cellar, forces it through the **eccentric** and counter shaft **bearings** and any oil thrown from the teeth of the driving gear is caught by the cap and carried back to the **cellar.**

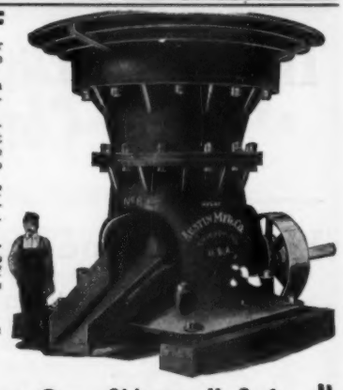
At the **bottom** of the cellar is a drain by means of which the **impure** oil can be removed insuring **absolutely perfect** lubrication because every part of the bearings operates **continuously** in a bath of **pure** oil.

One never has to expose the bearings of the "Austin" to **dust** when in operation. Fill the oil cellar to the required height and the machine **must** oil itself since no oil can **escape** from the oil cellar and therefore maintains a **constant** level.

Sizes for all requirements.

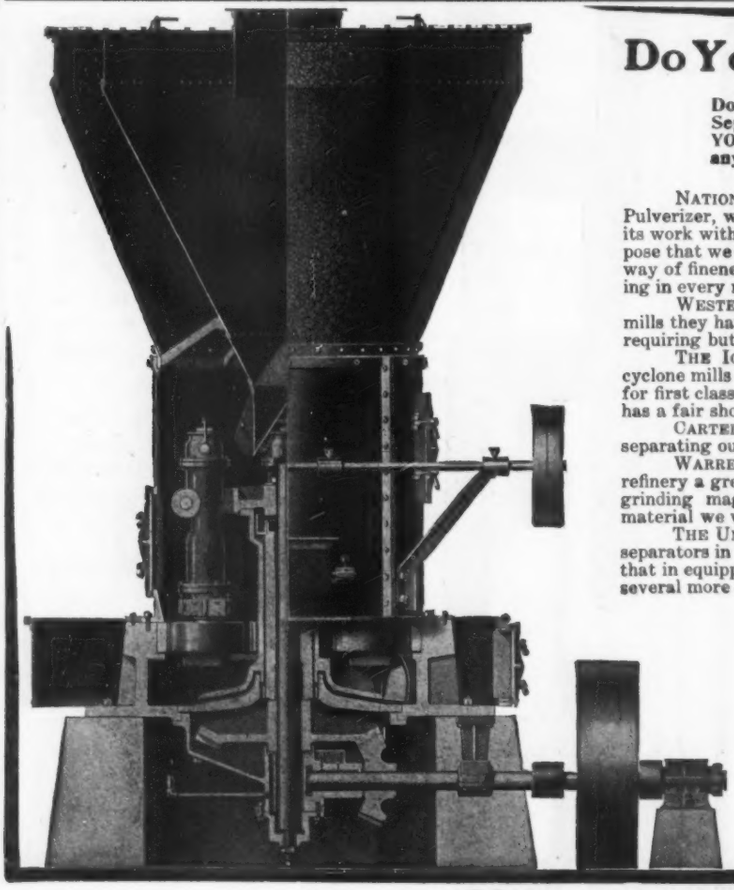
We are the world's largest builders of rock and earth handling machinery.

Catalogues of all departments on request.



Austin Manufacturing Co. Chicago, U. S. A.

New York Office, Park Row Building



Do You Grind Paints or Pigments?

Do you use the Raymond System of Pulverization and Air Separation? Would you use it if you knew it would SAVE YOU MONEY and INCREASE YOUR EARNINGS? Write to any of the following satisfied customers:

NATIONAL LEAD CO., Chicago: We are very glad to say that the Raymond Pulverizer, which we have used in our oxide works for several years past, has done its work with perfect satisfaction, and we consider it the best machine for that purpose that we know anything of. It gives a very uniform and regular product in the way of fineness, and does not get out of order easily, being very reliable in its working in every respect.

WESTERN DRY COLOR CO., Chicago: In the three years we have used your mills they have worked to our satisfaction, turning out a uniform fine product and requiring but few repairs.

THE IOWA PAINT MFG. CO., Fort Dodge, Ia. We have used one of your cyclone mills for eleven years, and we highly recommend it after that long service for first class pulverizing work. Your machinery needs but little attention and if it has a fair show it will give perfect satisfaction.

CARTER WHITE LEAD WORKS, Chicago: We have used your Separator for separating out tailings from the red lead and litharge with satisfactory results.

WARREN BROTHERS CO., Boston, Mass. We have been using your mill at our refinery a great deal in the last three years and during the past six months have been grinding magnesite with it, getting 75% passing 200 mesh screen. This latter material we were unable to grind to this fineness with any other mill.

THE UNITED STATES GRAPHITE CO., Saginaw, Mich. We have used your separators in our plant here at Saginaw upwards of ten years with such satisfaction that in equipping the new plant which we moved into only a year ago, we installed several more of them.

These are a few out of the many, all highly satisfied users of the RAYMOND SYSTEM. How would you like to travel in their care-free class?

Raymond Bros. Impact Pulverizer Co.

141 Laflin Street, CHICAGO

R.H.O.ADS

LEATHER BELTING

Rhoads Cement Mill Belt Preserver

For leather belts in cement mills we know no other dressing equal to

Rhoads Cement Mill Belt Dressing

It lubricates and preserves the belt and gives it grip, while reducing the common tendency to cake and form air pockets, which destroy the grip. *Let us send you a sample large enough for you to test.*

J. E. Rhoads & Sons

PHILADELPHIA, 12 N. Third St. FACTORY, WILMINGTON, DEL. NEW YORK, 40 Fulton St.

THE TIES THAT BIND

a brick wall *Better* than any on the market are the *Leader and Acme* Wall Ties for solid or veneer walls. Manufactured by

Specialty Manufacturing Co.

1221 Grant Avenue,

WRITE FOR PRICES. ALLEGHANY, PA.

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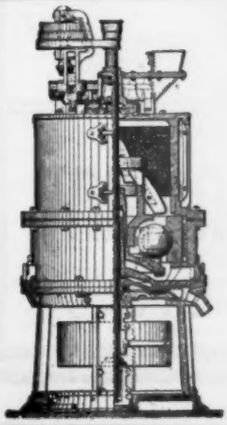
Attorney-at-Law and Solicitor of Patents

146 Deitz Bldg., Washington, D. C.

Patents secured promptly. Trade Marks registered. Reports rendered as to patentability, validity and infringement. Hand Book for inventors sent free upon request.



Fuller-Lehigh Pulverizer Mill

The Best Pulverizing Mill Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine

OUR CLAIMS:

Greater Output Better Fineness Fewer Repairs Dustless

Few extracts from letters received from users

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

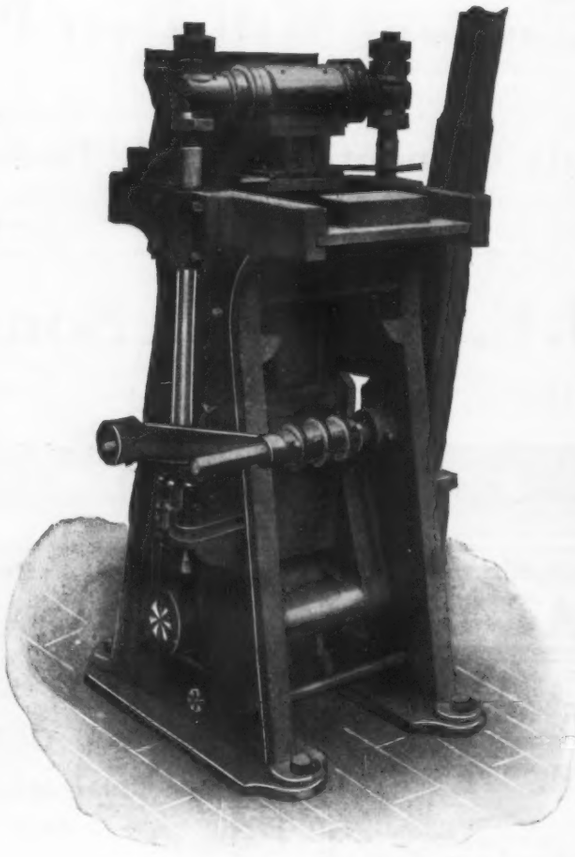
If interested, write us for further information

LEHIGH CAR, WHEEL & AXLE WORKS, CATASAUQUA, PA. U. S. A.

THE GRATH
Special Hand Power Brick Press

For Highest Grade Press Brick from Sand-Lime, Dry or Semi-Dry Clay.

For Plain and Ornamental Brick.



The only Hand Power Press Guaranteed against Breakage.

Twenty-Eight in Use, all Giving Satisfaction.
If you are Making Press Brick you Need one Also.

For Press Brick Machinery, any Capacity and Guaranteed to be the Best, send for our Catalogue.
Satisfaction Guaranteed.

Illinois Supply and Construction Company

512 and 513 Holland Building, ST. LOUIS, MO., U. S. A.

"Brownhoist" Locomotive Crane

Equipped with clam-shell loading bucket offers the greatest capacity as well as economy for handling sand and gravel in the pit. Crushed stone and screenings loaded and rehandled at minimum cost.

Advance Your Profits by Increasing the Output.

The Brown Hoisting Machinery Co.

CLEVELAND, OHIO

FOR RAPID ROCK DRILLING WITH LIGHT EXPENSE USE

WONDER DRILLS

ALL-STEEL HOLLOW BITS and BIT SHARPENING MACHINES

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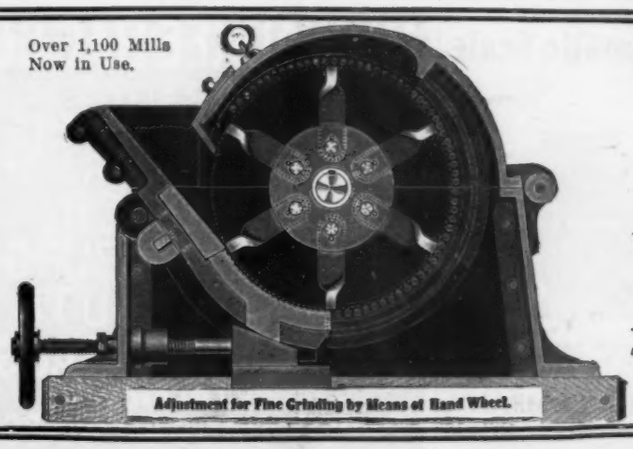
Hardsocg Wonder Drill Co. **Ottumwa, Iowa, U. S. A.**

Over 1,100 Mills Now in Use.



RAW MATERIAL Grinders

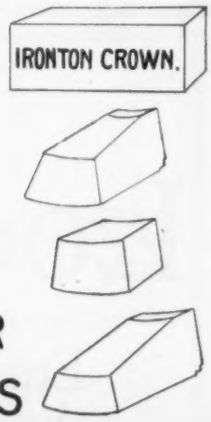
UNIVERSAL for Tube Mill Feed, 800 bbls. per day 20 mesh.
VULCANITE for ½ in., ¼ in. and ⅛ in. work.
We also grind Lime, Gypsum, Coal, Etc.

Write for Bulletin No. 12.

The Williams Pat. Crusher & Pulverizer Co.,

Old Colony Building, CHICAGO.

ROTARY CEMENT LINERS.



LIME KILN LININGS.

GROUND CLAY FOR WALL PLASTER AND BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

American Process Company
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RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.
NEW YORK CHICAGO

Cummer Dryers

See Other Ad. Page 70

THE F. D. CUMMER & SON CO., Cleveland, Ohio.

BRICK and MORTAR COLORING

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."
CORRESPONDENCE SOLICITED.

CLINTON METALLIC PAINT CO., CLINTON, N. Y.

J. K. WILLIAMS & CO.

EASTON, PA.

The Largest Manufacturers in the U. S.

BRICK AND MORTAR
COLORING
OF ALL SHADES.

Correspondence Solicited. Samples and Estimates cheerfully furnished on application.

S. W. SHOOP & CO.

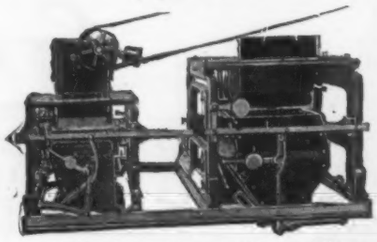
ALTOONA, PENNSYLVANIA

Designers and Builders of the SHOOP IMPROVED PATENT LIME KILNS. Designing and Installing a Specialty.

YOU may make a mistake in your mixtures, but the

Richardson Automatic Scale

CAN NOT



The Richardson weighs accurately, proportions of Sand, Lime, Brick, Color and any other materials.

RICHARDSON SCALE COMPANY,
18-20 Park Row, NEW YORK
also Chicago and New Orleans

MILWAUKEE BAG CO.

MILWAUKEE, WIS.
HIGH GRADE PRINTERS & MANUFACTURERS OF
DUCK, OSNABURG AND JUTE CEMENT BAGS.
DEALERS IN
PAPER BAGS & TWINES.
WRITE FOR PRICES & SAMPLES.

ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VI. **CHICAGO, MAY 20, 1907.** **Number 12.**

BUILDING MATERIALS EDITION.

Published on the 20th of each month by

THE FRANCIS PUBLISHING COMPANY

EDGAR H. DEFEBAUGH, PRES'T.

Seventh Floor Ellsworth Bldg., 355 Dearborn St., Chicago, Ill., U. S. A.

Telephone Harrison 4960.

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HENRY H. GIBSON. BENJ. F. LIPPOLD.

ASSOCIATE EDITORS:

HENRY C. WHITAKER, Barre, Vt. INKERMAN BAILEY, JR., New York City.

Communications on subjects of interest to any branch of the stone industry are solicited, and will be paid for if available.

Every reader is invited to make the office of Rock Products his headquarters while in Chicago.

Editorial and advertising copy should reach this office at least five days preceding publication date.

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In the United States and Possessions and Mexico.....$1.00

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Application made for entry as second-class matter at the Post Office in Chicago, Ill.

If you are a quitter, don't advertise.

Alaska has adopted concrete with success.

When trade is dull get a little more energy behind the gun.

The high prices of wooden lath are insuring the success of substitutes.

Uniform weights and measures in the lime trade would mean better prices.

Panama canal upheavals are dormant for the time being. Let us be thankful for so much.

Deliveries of all kinds of building materials are easier, and the first rush of the season has begun.

Because your raw material is taken out of the ground is no reason for figuring it on a "dirt" basis.

ROCK PRODUCTS was published in Louisville; *is* published in Chicago now. When in Chicago, drop in.

Both lime and cement have been very scarce on the Pacific coast, where building operations are phenomenal.

No other embarrassment compares with the plight of the fellow who has bitten off more than he can chew.

The dealer has been kicking on the sack. He says a better one is necessary in the shipment of cement. Is it?

"If you would travel the only way," the information collated by departments devoted to your business can be found in ROCK PRODUCTS.

The wage scale in the producing or handling of materials now-a-days is a large factor in the whole cost. Can you get the results for the money paid?

A dealer in the wilds of Illinois, about thirty miles from Chicago, insists that the cement brick is better for chimneys than the clay brick. Have you tried them?

The road contractors have got all the business they can comfortably handle this year. Why should we bother about the beyond, which really don't belong to us?

The Jamestown Exposition is a winner as far as natural attractions and architectural accomplishments are concerned. This is one of the fairs really worth the money and effort.

The amount of sand reclaimed and consumed this season will be nearly double what it was one year ago. The money value will be much more than double, for it's better sand, you know.

Fine grinding in the manufacture of products of the rock is at last securing the recognition necessary for the consumption of cement and other products. The pulverizing men are getting busy.

The difference between a profitable business and one that is barely limping along is contained in the business that could have been placed had it been tackled in time and in the right way, but was neglected.

Cement companies are organized in Kansas with so much speed that one can hardly see through the dust and noise they are making. But it takes a long time to build a mill and get it into running order.

Strikes at the beginning of the activities of each building season among the workers in the various trades are now more regular than the weather. One can almost tell what month it is without looking at the calendar. Let us thank God that it is no worse.

Don't try to figure out that your competitor is cutting prices to get the business, but take up your card index and see if you cannot stir up something. The influence for better conditions in trade depends on the individual effort collectively aimed at the same bulls-eye.

The government of Uruguay is about to expend $3,000,000 on equipment for the construction of public improvements, chiefly roads and bridges. Not a single American manufacturer of machinery or supplies is represented. Whose fault is it if the business goes to those who go after it?

If you have lost interest in association life, get busy and organize one yourself. Very often people get discouraged with an organization because they are not one of the praying members. Put yourself in the inner circle. You will be welcome. Take your part and don't cuss the fellow that is carrying the burden.

It is up to the stone interests to get behind the Rivers and Harbors bill and individually consult and enthuse their congressmen. The enlarged appropriations for rivers and harbors mean more money to the stone industry. And don't wait until next winter to take it up. The co-operation is needed right now.

If you are burning lime, there are just two points worth considering provided you have not already done so. One is the fuel question; think of the economies of modern combustion systems; the other is the hydration of the product. Here is economy at the producing end, and expansion where the money comes from. Selah!

Editorial Chat

A. J. Whiteford, the new traveling secretary of the National Lime Manufacturers' Association, has been conferring with ROCK PRODUCTS for a few days to get a line on the large amount of work that lies before him. Peter Martin, president of the association, was helping him to get information to make a good start. Mr. Whiteford says that Charlie Warner told him to "just read everything that ROCK PRODUCTS had ever printed on the subject of lime and he would know all about it." We return this compliment to Friend Warner with much appreciation, and since he has helped us out so many times, his remark reminds us of that celebrated little incident that happened in Philadelphia many years ago, when the gallant Marquis de Lafayette, in paying his compliments to a lady, kissed her hand and afterwards found that his own portrait was imprinted upon her glove.

Charles F. Massey, who represents the Fischer Hydraulic Stone and Machinery Company of Baltimore, Md., at the Chicago branch office, is one of the boys that keeps up with the big engineering propositions and knows what a granite quarry in North Carolina looks like, and it is even said that he has crushed limestone in the neighborhood of Baltimore. He has studied the concrete block business from the standpoint of the practical quarryman, who knows the full value of fine surfaces. When he comes round to see you, just use a little diplomacy and draw him out, for there is something of value in his chats.

Fred E. Paulson of the Lehigh Portland Cement Company, Indianapolis, was in Chicago on one of his still hunts the other day. He was looking for cars. He was one of the first visitors at the office of ROCK PRODUCTS and said, "Great Scott! Good location! Orders are still plentiful for Lehigh Portland cement."

The latest innovation that has taken place in coal mines is the substitution of concrete props for the expensive and temporary mine timbers. The Reading Coal Company has made exhaustive and satisfactory experiments at its mine at Shamokin, Pa., near Wilkesbarre. A plant is being erected for the manufacture of concrete mine props at Trevorton, Pa., under the auspices of the Reading Coal Company. Props will be manufactured in this plant and shipped to all the mines operated by the company.

For several years this great coal-mining concern has been investigating ways and means for the preservation of the wooden timbers used in its mines. Expensive experiments, such as creosoting the timbers and coating them with an emulsion of pitch to prevent the absorption of moisture, which invariably makes the heavy wooden timbers and boards rot very quickly, have been made. Timbering and retimbering constitutes one of the most expensive departments of mining engineering, especially where the mines have been worked for a long time, and really amount to a very extensive cavern. The present step on the part of the Reading company indicates that in the future permanent concrete supports will replace wooden props.

J. E. Kennedy has opened an engineering office at 114 Liberty street, New York. He is an expert in the mining, crushing and separating propositions. He will design and estimate both for the erection and equipment of smelting, mining, crushing, conveying and cement manufacturing plants; also, steam, electric and gas power plants. He is a man of wide experience, having been connected with the leading machinery, equipment and supply concerns of the country, operating in these especial lines for years.

Edward Ryan, a contractor of New York, was found murdered and robbed a short distance from his home in that city on May 16. A blood-stained bludgeon lying near by showed the manner of his death.

Charles C. Kritzer has been ill for more than a week. His physicians are kind enough to say that he has rheumatism, but his dearest friends suspect that it is gout. The way he has been selling hydrating plants in all parts of the country, from Philadelphia to the shores of the Mississippi, makes his movements resemble a triumphal procession, and it must be one continuous junket; therefore, the suspicion with regard to the gout. Those eminent celebrities, Dr. Franklin and Dr. Johnson, were bothered with the gout in their days of success, and everybody knows the cause. By the way, the Kritzer Company is just bringing to completion the great plant for hydrating lime at Hannibal, Mo., for the Marblehead Lime Company of Chicago. It is expected that in a very few days this plant will be in full operation.

J. W. Sanderson, general manager of the United Concrete Machinery Company, Columbus, O., has just returned from Waterloo, Ia., where he effected the absorption of several of the concrete machinery concerns operating in that city. He says that a fine business year is now opening up in the line of concrete machinery and his big company is getting its full share of the trade. The thing that interests him most at the present time is the arrangement of his company's exhibit on the main floor of the grand Machinery Hall at the Jamestown Exposition. The United Concrete Machinery Company has secured the largest space conceded to one exhibitor at the exposition. It is 50x60 feet and will show a full line of concrete block machines, mixers, power and hand tampers, and every part of the exhibit will be in active operation throughout the entire period of the exposition.

Colonel John P. Given, who is now representative of this concern at Norfolk, will have personal charge of the exhibit. For several years Col. Given has been actively interested in the development of concrete machinery. He assisted in organizing the National Cement Users' Association and was the temporary chairman at its first meeting at Indianapolis.

Mr. Sanderson has just shipped two carloads of machinery from the Waterloo branch, and the completion of the shipment of machinery from the home plant at Columbus will be accomplished within the present week.

The exhibit at the Jamestown Exposition will embrace many models of concrete block construction and everybody who "wants to be shown" just how it is done will have the chance of his life, for a regular factory proposition will be carried on, producing blocks that will be sold and go into actual construction.

Thomas Magiff of the Chicago office extended the big glad hand of the Atlas Portland Cement Company to the ROCK PRODUCTS bunch almost as soon as it arrived at the new home in Chicago.

L. W. Hewes, Chicago manager of the Power and Mining Machinery Company, whose plant is at Cudahy, Wis., was not too busy to welcome the advent of ROCK PRODUCTS in Chicago. His experience with crusher propositions dates back to the time when the first crushing machines were set up 27 years ago, and his expertness in the intricacies of crushing stone comes to him in a legitimate way. Away back in the times of the Gates Iron Company he was foreman of the company's shop and has built and installed more crushers, and personally had to do something in the mechanical completion of them, than any other man now living. There is not an improvement or development with which he is not familiar, from the first crude rock breaking machines to the present highly developed and exquisitely calculated crushing plants. Speaking of the sales of McCully crushers, he said: "Right here in the city of Chicago we are putting up two of the finest plants that have ever been installed—one for the Artesian Stone & Lime Works Company and one for the Chicago Union Lime and Stone Company. At Jersey City our eastern branch has just completed one of the most perfectly equipped rock crushing propositions that was ever built. All of these plants are models of the highest type of crushers made at the present time."

The New York Board of Fire Underwriters are pleading with the Building Code Revision Committee of that city to embody stricter requirements for construction in the new building code. They declare that some radical action is needed to improve building conditions and to further relieve the risk of fire losses. They admit that their reserve assets would be insufficient to meet more than one-fourth of the losses represented by policies now in force should a conflagration occur covering an area equal to that of the Baltimore fire or that of San Francisco one year ago. It is certain that, after perfect fireproofing is universally practiced, we shall need less insurance, which at the present time by this admission is insecure at best.

The Fuller Engineering Company, Allentown National Bank Building, Allentown, Pa., was recently incorporated to act as consulting engineer, especially in connection with the manufacture of cement. This company controls the various Matcham patents, including the preliminary dryers for utilizing the waste gases from the kilns for drying the raw material—the Natural Draft Cooler for cooling the clinker, utilizing natural draft instead of forced draft, thereby eliminating all blowers and power required, that are used in the present methods, and the Matcham Coal Dryer, which is the most economical one on the market, in which the gases from the furnace under the dryer are carried around and through it, thereby utilizing the largest percentage of the heat generated, making it a very efficient system. They also control the Matcham Natural Draft Burning System, in which the pulverized coal is drawn into the kiln by natural draft instead of forcing it in by means of blowers.

The members of the above company are: C. A. Matcham, president, formerly general manager of the Lehigh Portland Cement Company; J. W. Fuller, Jr., general manager, and H. G. Barnhurst, mechanical engineer.

This company is now ready to make reports on properties, estimate on costs and design cement plants complete.

The Williams Patent Crusher hustlers, the Williams boys of the western sales agency, Chicago, dropped in to say "How do you do?" to ROCK PRODUCTS before we had been in town over thirty minutes. We appreciated the call and we are pleased to note that their sales have greatly increased of late and prospects are very good indeed with them. They carry a good class of machinery and keep in touch with buyers; hence, it is not surprising that they are doing a big business.

Bert M. Swet, who represents the Lehigh Portland Cement Company in the Chicago district and makes his home at the Great Northern Hotel, otherwise known as the Out-of-Town Contractors' Rendezvous, was an early caller at our new home. It was about the time the publishing house paraphernalia was arriving, and the editor was using one box for a desk and another for a chair. Bert almost fell over a barrel full of memoranda which don't weigh as much as cement, but we were glad to receive his cordial welcome. He was on his way to attend a bunch of lettings out of town and it is a cinch he got his share, for he always does.

The Phillips Concrete Stone Company of Columbus, O., has been incorporated. This is the concern over which William H. Phillips presides, and which for a number of years has been very successful as concrete contractors in Ohio's capital city and vicinity. This reorganization of Mr. Phillips' interests upon a broader basis is a tribute to his reputation. He has built a large number of fine residences, several churches, besides two or three big factories in which concrete building blocks were used exclusively for all the wall construction. Mr. Phillips is a practical man and has made good with the concrete block because he has employed it in an intelligent way. Associated with Mr. Phillips in his new corporation are Bernard F. Stone, H. J. Shaw, Russell M. Hodges and E. Amlin. They will at once begin the construction of an immense plant for the manufacture of concrete building materials. It will occupy an entire city square, and will be equipped with every known device that will facilitate production of a strictly high-class product. The company's construction department now has a large number of orders for buildings to be completed during the present season. This expansion was necessary because of the rush of business.

Concrete Engineer

Standard Instructions.

At the last convention of the National Cement Users' Association, there was quite a discussion about the wide difference in specifications employed by concrete engineers and manufacturers of cement commodities of every description. E. S. Larned of Boston, the chairman of the committee on Tests of Cement and Cement Products, suggested that it would be possible to inaugurate a definite basis for the comparison of practical results, by adopting a comprehensive outline for practice in the shape of standard instructions. Lack of time prevented further development of this progressive idea, and it will certainly come to the front at the next convention. Well-defined and thoroughly practical standard instructions are sure to develop into the much-needed standard specifications, which will result ultimately in placing all the different branches of concrete construction and building materials upon the most intelligent basis. The fullest understanding of the true merits of all the different applications of concrete for structural purposes can only be secured by standardizing the methods, and thereby the results of concrete work in the reinforced and monolithic branches. The same thing applies equally to the manufacture of blocks and ornamental parts. It is the one development most needed, to multiply the confidence of the investors, as well as the general public in concrete construction.

Since the convention in January we have been called several times to assist by giving information to municipal committees employed in drafting building ordinances, and on every occasion the demand for a definite standard of concrete work was very pronounced. The lack of harmony expressed by the different engineers and contractors was in every case most confusing to the members of the several building committees. If an accepted standard, upon which all well qualified engineers and contractors agree, could be promulgated in such an inquiry, we could at least secure more intelligent and reliable ordinances.

The following extract, from the code of regulations for the design of reinforced concrete work adopted by the French Ministry of Public Works, has been found useful as a suggestion in the line of standard instructions:

The quality and mixture of the materials is to be given in all proposals for concrete work. Sufficient water must always be used to make the concrete so plastic as to surround the reinforcement thoroughly and fill all voids. The forms, and the support of the reinforcement, must be so stiff as to resist without perceptible deformation the load and shock imposed during the construction. The concrete must be deposited with care in layers not exceeding 2 inches, except in case large stone are used in the concrete and except in case the concrete work is poured. The spacing of the reinforcement and the distance between the forms and the reinforcement must be such as to permit of thorough tamping and complete filling of voids, and shall be at least ¾ to ¾-inch. The concreting of a member should be continuous, but if interruption is unavoidable, on resuming work the surface of the old work should be cleaned down to sound concrete and thoroughly wet before the fresh concrete is deposited. Concrete work shall be stopped in freezing weather, and when work is resumed all concrete which appears to have been frozen shall be removed. Concrete work shall be kept as moist as necessary to insure set during at least 15 days after placing. The removal of forms and centers shall be done without shock, by purely static forces, and only after the concrete is strong enough to withstand the stresses to which it will be exposed. Floors shall be tested by a load at least as great as the designed load, on an area at least equal to one panel. Such loads shall remain in place at least 24 hours, and the deflection shall not increase after the first 15 hours. The age of the concrete work at the time of testing shall never be less than 30 days (floors), shall be at least 45 days for structures of moderate importance, and at least 90 days for large structures.

Concrete Printing Buildings.

Printing and lithographing presses, by their weight and intermittent action, as is well known, produce unusual stress upon building construction. This fact renders many existing buildings unsuitable for occupancy by printers and lithographers without considerable strengthening of the construction. Even when this is done it is often necessary to locate the presses upon the lower floors to avoid excessive vibration. An economical form of construction which successfully combines the carrying of printing machinery with practically no vibration is, therefore, of especial interest to printing companies contemplating the erection of new buildings. This result and more has been accomplished by the use of reinforced concrete for the Ketterlinus Lithographic Manufacturing Company at Philadelphia, Pa.

KETTERLINUS BUILDING, PHILADELPHIA.

This building contains eight stories and a basement, with an average height to each story of 14 feet, and was the first high reinforced concrete building erected in Philadelphia. It is located on the northwest corner of Fourth and Arch streets, and has a frontage on Arch street of 80 feet, and on Fourth street 63 feet. On Fourth street it joins the previously erected eight-story building occupied by the same company, which is of steel construction fireproofed, and has brick walls.

Although the interior of the new building is constructed of reinforced concrete throughout, it was desirable to make the exterior conform to that of the old building, so that the two structures would present the appearance of a single building. This result was successfully accomplished by veneering the concrete wall piers, filling the spaces between the windows with mottled buff brick, and providing trimmings to match the older building.

There are four rows of circular concrete columns in the interior, 13 feet 6 inches apart in one direction, and 19 feet 2 inches in the other, varying in size from 23 inches in the first story to 11 inches in the eighth story. In the basement and first four stories, the columns are reinforced with a core composed of steel angles and round rods in order to keep the size as small as possible, and in the four upper stories they are of concrete, reinforced with round rods only.

The floor construction is designed for loads up to 350 pounds per square foot, and consists of rectangular concrete beams and girders, 8 by 15 inches and 11 by 18 inches respectively, supporting a 4-inch flat concrete slab, all reinforced with steel. The beams and girders have beveled edges, and, together with the under side of the floor slab, are smoothly finished and painted white. On this slab wood sleepers are placed, the intervening spaces being filled with cinder concrete, and on top of them a finished maple floor is laid. The top of the concrete slab is waterproofed to prevent the damaging of stock by the penetration of water from one story to another, and the monolithic nature of the construction also prevents any jarring through of dust from a floor above which might injure delicate work.

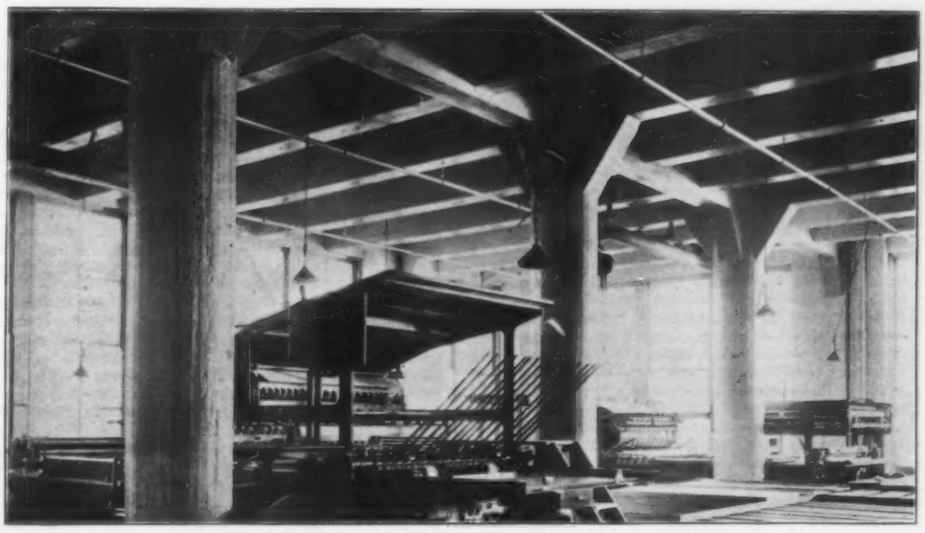
Maximum daylight in the several stories is obtained by making the piers between the windows as small as consistent with the necessary stability. On the top floor, reinforced concrete sawtooth skylights provide additional daylight, while excluding the direct sunlight.

Practical immunity from interruptions to the business and damage to the stock by fire is obtained by the design and construction of the building, and it is notable as being the only building in the congested portion of the city insured by the Associated Factory Mutual Insurance Companies. By the use of reinforced concrete, the entire structural portion is rendered fireproof. This, supplemented by the use of windows with frames and sash of metal and glazed with wire glass, effectually prevents the entrance of fire from without. In addition, all stairways and elevators communicating with the several floors are enclosed in fireproof shafts, the openings to which are protected by fireproof doors, preventing the spread of fire from one floor to another.

Fire extinguishing equipment is also provided in the form of a 750-gallon underwriter fire pump in the basement connected to the street mains on Arch and Fourth streets. Sprinklers are also installed throughout the building, supplied from a 35,000 gallon tank located on a tower extending above the roof.

Commencing with the upper floors, the building is occupied with the artists' room and storage of stock, and lithographic stones, the progress of the finished work being downward. The presses are located on the fifth, fourth and third floors, the embossing, finishing and binding rooms being on the second floor, and the shipping department and general offices on the first floor.

Before the erection of the concrete structure, the vibration caused by the action of the presses located in the old building was distinctly noticeable. As the erection of the new building proceeded, this vibration was distinctly lessened. Fifteen and twenty-ton presses are now located upon the third, fourth



INTERIOR KETTERLINUS BUILDING, SHOWING STRUCTURAL MEMBERS.

and fifth floors of the new building and produce practically no vibration, showing the superior rigidity of the concrete construction.

An example of the economies of reinforced concrete construction is given by the history of this building. Although the cost of building construction, due to increased cost of labor and materials, has advanced 40 per cent since the first portion was completed, the reinforced concrete half of the building, which was erected last and has exactly the same floor area as the first half, cost less money.

The entire work of designing and supervising the construction of this plant was in charge of Ballinger & Perrot, architects and engineers, Philadelphia, Pa.

FORTY-SIX STORIES HIGH.

Continued from page three.

blocks—this is the intricate technical task that has tested the power of most ingenious and resourceful engineers.

The era of extremely tall buildings began but recently. Up to the time of the late Civil War there were no buildings, except churches, which exceeded five stories in height. But with the introduction of the steel cage design a new impetus was given to the construction of very high buildings. And with this a serious problem arose of providing the safest kind of a foundation for such buildings in the lower part of Manhattan, where the soils are of an excessively treacherous character, and where bedrock is to be found at a considerable distance below the level of the streets. In the northern part of the city comparatively little difficulty is encountered in the construction of foundations for buildings, due to the fact that little excavation is required to reach bedrock or some other hard bottom.

In the southern portion of Manhattan, however, which is surrounded on all sides by tidal waters, a layer of quicksand is to be found, which varies from 15 to 50 feet in thickness. Underlying this is found a stratum of hard-pan, and then bedrock at a distance of from 50 to 95 feet below the level of the street.

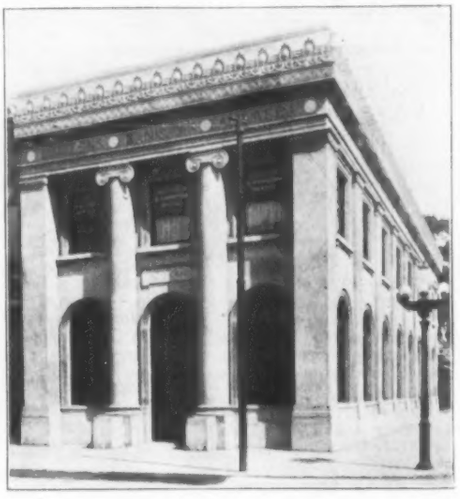
The foundation of the new 46-story Singer Building, Broadway, illustrates the highest advancement which has been reached in this branch of engineering. The building itself in several ways, also, is a record-breaker and a world-beater. It is quite evident, even to the layman, that in order to safely support such a building (the Singer is to rise 612 feet above the street level), the foundations must be anchored directly to solid bedrock; that to excavate for these foundations through the quicksand far below the shallow foundations of the adjoining buildings without endangering the latter presents a serious engineering problem.

These difficulties have been successfully overcome by the contractors who have simplified this class of work greatly by many ingenious devices which they have patented. This Singer building is being erected for the Singer Company, and it will be the highest masonry structure in the world, with the exception of the Metropolitan Life Building, plans of which have been recently made. It will be about three times as high as old Trinity church, from the steeple of which people used to see New York. It will be more than twice as high as the Flat Iron Building, and higher even than the Washington monument or the Cologne cathedral. The area of its combined floor space will be about 413,820 square feet, or 9½ acres. Considering it all on the level, this would cover about 28 downtown blocks, or the available space in the territory bounded by Exchange place on the south, Dey street on the north, Trinity place on the west and Pearl street on the east, and would provide standing room for at least 100,000 men. Within this enormous structure are to be accommodations for an office force consisting of about 7,000 persons, or the numerical personnel of about seven regiments.

The total weight of this building will be in the neighborhood of 90,000,000 pounds, and it will be carried by 54 steel columns. In consequence of having to support this tremendous weight these columns have been carried down to bedrock, 90 feet below the curb, by 30 caissons. These are simple, air-tight, bottomless boxes, square or cylindrical in cross-section, having interior chambers large enough for a gang of men to enter and excavate the bottom. The excavated material passes up through steel shafts to the roof. As the caisson extends below the water line the compressed air is pumped in to expel the water from the open lower or cutting edge. As the caisson descends, a greater pressure of air is required, which is supplied continuously to the men through an ordinary pipe leading into the working chamber. The caisson is thus sunk by undermining, aided by heavy weights of concrete which are added over the roof of the caisson as the latter gradually sinks, and also by additional pig iron blocks. When it has reached a satisfactorily hard stratum (which is leveled and cleaned), the whole interior of the caisson, and the shaft connecting the working chamber with the outer air, is filled with rammed concrete, forming a solid monolith upon which the superstructure firmly rests.

To prevent the passing in and out of a bucket, or of men from the outside air to the caisson, or vice versa, without excessive loss of compressed air, and with safety to the men, an air lock or air chamber invented by Daniel E. Moran, vice president of the Foundation Company, is used. This air lock surmounts the top of the main shaft leading to the working chamber, and by its use it is now possible to sink caissons through quicksand and water close to adjoining buildings, without causing flow of material from under the latter, which, if allowed to occur, would settle them and crack them. This is the most important and crucial invention which more than all the rest has made possible the construction of the skyscrapers of lower Manhattan.

When a man desires to enter the working chamber



CITIZEN'S NATIONAL BANK, ALAMEDA, CAL.

he first goes into the air lock, closing the door tightly behind him. Compressed air is then admitted to the lock until the pressure in it and the working chamber are equalized. The door between the latter and the air lock then opens by its own weight. The reverse operation of coming out is equally simple. The man climbs up into the air lock from the working chamber, whereupon the lower door is closed tightly. The valve is then opened, which permits the gradual escape of the compressed air in the lock, and when the pressure has been reduced to that of the outside air, the upper or outer door opens and the man steps out.

In the old days of pneumatic caisson work, before the invention of the Moran air lock, the material was carried out in canvas bags by the men, or blown out by pressure through a 4-inch pipe. By means of recent improvements in this air lock it is possible now to use a bucket of half a cubic yard capacity between the excavation chamber and the outer air almost as freely as if the work were done in the open.

The most important feature of the Singer building (of course it is the most conspicuous) is the tower, which will be 65 feet square and will rise 28 stories above the main roof. This tower which is to be carried by 36 columns, will rest wholly or in part on 18 of the 30 caissons, and the method of tying these steel columns to the concrete caissons was described and illustrated in ROCK PRODUCTS for November, 1906. The anchor rods extend down into the caissons about 50 feet below the basement floor line, and have been designed and placed so that they counteract the upward pull, at the base of the columns, due to the force of the wind blowing upon the exposed surface of the tower.

The size of the caissons used varies from a minimum of 6.5 feet in diameter for two of the detached columns, to 7 feet 8 inches by 21 feet 2 inches. The caisson working chambers, which weigh up to 12 tons each, are made of heavy 12x12 timbers, built and assembled at the contractors' Greenpoint yard, and then trucked to the site. After the caisson is placed in its correct position on the ground, about 14 feet below the level of the curb, a temporary deck or roof is constructed, through the center of which the steel collapsible airshafts are put. A 1-2-4 concrete is then placed around the latter, forming a slab about 12 inches thick. When hardened, this slab has sufficient strength to support a considerable weight of concrete added to form the rest of the caisson wall. When the concrete pier has been built to a height of about 25 feet, the air lock is placed over the top of the air shaft, compressed air is introduced into the working chamber, and the excavation begins.

As the material is excavated from the inside of the caisson the later gradually sinks from its own weight, aided by the addition of pig iron blocks placed on top. The maximum air pressure used in the work of excavating for the Singer building foundation did not exceed 30 pounds per square inch, and was used on as many as six caissons working simultaneously. After the caissons were sunk to about one-half their final depth, excavation was discontinued while the removable timber forms were built up from the level of the ground and the remainder of the concrete was deposited in them.

During the construction of one of the foundations of the new Singer building, the adjacent old Singer building, much smaller in size with far shallower foundations, presented some peculiar and hazardous conditions and difficulties, which called for exceptional skill and maneuvering as to shoring. As the adjacent north wall of the old Singer building has T-beam grillage footings resting on sand about 20 feet below the Broadway curb, it was necessary to shore it in order to avoid any settling while the caissons were being sunk near it, and to a depth of about 70 feet below the lower part of the old building's foundations. As the estimated load of the west wall of the old building is about 30 tons per lineal foot, it was necessary to space the needle beams, which carry the wall, very close together. The five caissons adjacent to this wall are placed so close together that it became quite a problem to make room for the supports for these needle beams. To allow for this, the wall was first supported on needle beams with exterior footings which cleared alternate caissons and allowed the intermediate ones to be sunk between them. After one caisson was sunk the needle beams adjacent to it were shifted, and their outer ends supported on this caisson, thus providing continually for the safety of the building. The needle beams are double tiers of 24-inch I-beams set on groups of 40 and 60 ton jackscrews with carefully designed cribwork of solid courses of 12x12 timber, distributing the load over a large area, and reducing the unit pressures to satisfactory amounts.

The plant required for this pneumatic tube work comprised: One four-boom traveler, two stiff-leg derricks, two Ransome concrete mixers, an Ingersol-Rand and a McKinernan air-compressor, six Moran air-locks, six Lidgerwood double-drum hoisting engines, four Rawson & Morrison boom-swinging engines, and one 14-inch air-cooler 14 feet long, built by the contractors. The average force employed consisted of 150 men in each of two shifts. The total amount of concrete used on the work was about 7,000 cubic yards, and the total amount of caisson and general excavation amounted to over 10,000 cubic yards. The work was done by the Foundation Company, A. Allaire, superintendent, and L. Brown, general manager.

[Editor's Note: The new Singer Building, herein described, is one of the most spectacular of the buildings for which this company has made foundations, but the concern is widely known and identified with important bridge piers, concrete tunnels, mining shafts, concrete dams and quays throughout the country.]

Fine California Job.

Frank B. Gilbreth recently completed in Alameda, Cal., an elegant two-story and basement reinforced concrete structure for the Citizens' National Bank of Alameda. All the structural portions of the building were made of reinforced concrete, including the roof and the stairways. The pillars at the main entrance were moulded in position and are monolithic with the building. The cornices are made up of cast cement blocks. The work was done on the basis of cost plus a fixed sum, and the expense was approximately $40,000. A space of 33x100 feet is covered by the building, the lower floor of which is occupied by the banking rooms and the second floor by offices.

From Our Own Correspondents

PHILADELPHIA, PA.

PHILADELPHIA, May 15.—A generally prosperous state of affairs prevails and as the building trades' strike is virtually off, a new impetus will be given, it is predicted, to the summer business.

It is interesting to note that thirty-five years ago the consumption of Portland cement was 3,000 barrels a year; in 1885, the output amounted to 135,000, and now the annual total runs up to 45,685,000. The immensity of these figures is demonstrated by the interesting calculation made, that the output of Portland cement during the year 1906 would be sufficient to construct a sidewalk, fifteen feet wide, which would extend around the globe. The extensive manufacturers of this product say they can sell every barrel of the stuff they can make. There is apparently no accumulation of stock in this material and no fluctuation in values.

The lime and allied industries, which manufacture extensively all sorts of building material, are all busy and prosperous. Lime, which has been hydrated, is fast superseding old-fashioned bulk or lump lime.

Cement block construction has not, as yet, become so popular in this section as on the west, especially for very high buildings. For smaller constructions, it has been more readily accepted. The blocks, undoubtedly, will be adopted eventually, as a vast amount of argument can be brought forward as to their superiority over almost all other building material.

It is noticeable that numerous large structures for factory purposes are constructed mainly of reinforced concrete, which feature will affect the brick men vastly more than the stone men. The fire brick industry is flourishing, manufacturers all being busy.

The Filbert Paving and Construction Company took out a permit to install reinforced concrete arches between steel skeletons in the building of the Evening Bulletin, at the northeast corner of Juniper and Filbert streets. The cost is given at $40,000. Roberts & Seeler are the architects.

A five-story reinforced factory building is to be erected on the north side of Washington avenue, east of Thirteenth street, by J. E. & A. L. Pennock, for Mrs. Anna Weightman Walker, at a cost of $100,000. This building will be fireproof throughout and will be leased to the General Electric Company, as a factory and warehouse.

John G. Brown has been granted a permit for reinforced concrete floors, columns and footing for an eight-story warehouse, for Grellet Collins, at the northwest corner of Sixth and Cherry streets, planned by Wm. S. Vaux. The cost is placed at $55,000.

A new $125,000 restaurant and bakery will be erected at 202 to 210 South Tenth street, for the Horn & Hardart Baking Company, according to plans by F. Russell Stuckert, architect. It will measure 78 by 188 feet, and will be a four-story reinforced concrete and brick building.

Thos. Reilly of this city has the contract for new buildings for the St. Francis Hospital at Pittsburg. The buildings will be of brick and reinforced concrete, with cut-stone trimmings. The cost is estimated at $570,000. S. F. Heckert of Pittsburg, is the architect.

The Wm. Steele & Sons' Company has completed plans for the large bread baking plant for the Freihofer Vienna Bread Baking Company on the block bounded by Clearfield street and Indiana avenue, and from Nineteenth to Twentieth streets. All the buildings will be constructed of concrete, brick and terra-cotta, and will be fireproof. The plant will consist of a one-story bread baking building, measuring 360 by 142 feet; a one-story "home" bakery, 189 by 104 feet; a three-story shipping building, 360 by 93 feet; a one-story power plant, 70 by 102 feet, and a cold storage plant, 153 by 54 feet. This company has received also a contract from Carl P. Berger, architect, to erect a two-story and basement store building at Marshall and Market streets, to measure 38 by 108 feet. It will be of brick and structural steel frames; all modern equipment, including steam heat, electric light and power, elevators, etc.; owner, Geo. B. Wilson.

Plans have been prepared by Architects Milligan & Webber, and permit granted to John W. Emery, for an eight-story reinforced concrete building for manufacturing purposes, to measure 30 by 170 feet, at 1214 Arch street, for Abner H. Mershon. The cost will be $122,000.

W. G. Moore received a contract from Milligan & Webber for a $64,000 addition to the plant of Bridgman Bros. Company, at Fifteenth street and Washington avenue. It will be a five-story concrete structure to measure 90x95 feet.

The Susquehanna Cement Company has been organized under a main charter, with a paid-up capital of three quarters of a million, to engage in the manufacture of Portland cement at "King Rock," Larry's Creek, twelve miles west of Williamsport, Pa. The King Rock deposit is quite a discovery for this neighborhood and, it is believed, will prove an extensive and valuable one.

The Philadelphia Roofing Manufacturing Company was incorporated under Pennsylvania laws on April 11, with authorized capital $10,000. Incorporators are Jos. B. Tufts, Albert E. Hartzel and Henry Trumbore of Philadelphia.

The Cement Products Company of Hanover, Pa., obtained a charter under Pennsylvania laws on April 18. Capitalized at $5,000. Incorporators are Howard M. Bange, John L. Aulabaugh and Guy W. Bange of Hanover, L. Leroy Bittinger and E. Maurice Bittinger of Bittinger, Pa.

The Chester Stone Company is a recent Pennsylvania incorporation. It has an authorized and fully paid-in capital of $10,000. The officers are: President, W. L. Ludascher; vice president, Herman L. Winterer; secretary and treasurer, Amos Y. Lesher. Their quarry is at Morgan Station, Pa., and their output will be face foundation stone and crushed trap rock. They are about to put in a Gates crusher.

The Souderton Pressed Stone Company was incorporated under Pennsylvania laws on May 3. Authorized capital $5,000. The incorporators are: H. B. Freed, H. S. Souder, H. H. Hunsicker, J. B. Delp, H. R. Hartzell of Souderton, Pa., and F. H. Souder of Lansdale, Pa.

The Pittsburg Art Stone Company of Connellsville, Pa., was incorporated under Pennsylvania laws on May 3; authorized capital $10,000. The incorporators are: H. A. Crow, V. H. Scissen, F. Neuroth, Peter Rutsek, C. L. Edmonds and S. M. Edmonds of Connellsville.

L. P. Curlett & Co., Wilmington, Del., obtained a charter under Delaware laws on May 4; authorized capital $100,000.

The Philadelphia Hydraulic Stone Company, Builders' Exchange, president, B. J. Krause of Wm. Krause & Son, treasurer, E. S. Bortel of E. S. Bortel Company, secretary, G. N. Buzby, is being organized for the purpose of manufacturing stone by the process of the Fisher Hydraulic Stone Machinery Company of Baltimore, Md., which concern has already numerous branches throughout the country, and from which excellent reports come in. They claim the stone made by this process is the hardest concrete stone made. Another virtue which they prove by test is its almost complete exemption from moisture absorption. A stone immersed in water for 52 hours showed a gain in weight of less than one percent. As for strength, a piece of this stone only sixteen days old stood a test of 2,601 pounds crushing strength.

C. R. Knapp & Co., Builders' Exchange, are putting up twenty concrete dwellings at Baregat City, N. J., and expect to contract for fifty more. They use the concrete block which they claim to be fire and damp proof and indestructible.

The Cyrus Borgner Company, manufacturers of fire brick and clay retorts, is an old established concern, doing an extensive business. Mr. Borgner reports busy, and regards favorably the outlook for summer trading.

There is no lull in business at the Philadelphia Fire Brick Works, 2306 Vine street. They are just filling a 100,000 fire brick order, and have no complaint to make whatever over trade conditions.

The Knickerbocker Lime Company, 366 N. 24th street, is one of the best known, as well as one of the most extensive concerns of its kind in this section. They report business moving uninterruptedly, with the exception of the slight handicap caused by the strike among the bricklayers, stone cutters and stone masons. This company is building a large plant for hydrating lime, which will be ready by July.

George T. Burridge of the Bonneville Portland Cement Company, 2029 Land Title Building, is away on a selling trip through New York state.

Charles Warner Company of Wilmington, Del., and 810 Land Title Building, Philadelphia, ranks among the largest manufacturers of Portland cement, lime, etc., in the East. It has a number of plants which are worked to the limit and sells its product as fast as it is made.

The Wm. G. Hartranft Cement Company, 1114 Real Estate Trust Building, sole agents for the Virginia Portland Cement Company, and the Phoenix Cement and Buckhorn Portland Cement Company, report business moving satisfactorily. They have all the orders they can conveniently fill, and regard the future outlook promising.

Earle Bottomley, assistant secretary of the Association of American Portland Cement Manufacturers, 1232 Land Title Building, has just returned from Old Point Comfort, Va., where he has been making arrangements for the coming meeting of this Association, which will be held at Old Point Comfort on June 10, 11 and 12. The Association has just issued an interesting book by George S. Webster, Chief Engineer of the Bureau of Surveys of the city of Philadelphia, on the subject of concrete bridges, with excellent photographs. This book was read before the quarterly meeting of the Association of American Portland Cement Manufacturers, held at the Bellevue-Stratford Hotel, Philadelphia, on April 10, 1907. A copy will be mailed to all members of the association.

The Whitehall Portland Cement Company, 1719 to 1724 Land Title Building, is a very busy concern. H. B. Green, manager, reports orders coming steadily. He expresses great satisfaction over the good work being done by S. J. Vail & Co., their representatives at Detroit, Mich. Sam Vail, by which appellation he is known by his many friends in Michigan, is one of the best known men connected with this line in that state, and judging from the amount of business which he gathers there, his friends do not forget him.

The Atlas Portland Cement Company, 112 North Broad street, is complacent over trade conditions. This concern is the most extensive manufacturer of Portland cement in the world, has six large mills, working to full capacity, and its daily shipments amount to more than 45,000 barrels.

PITTSBURG AND VICINITY.

PITTSBURG, PA., May 16.—Cement and concrete work in Pittsburg and the Pittsburg district is now well under way, and from present indications there will be more of this class of work done here during the next seven or eight months than there has been in the history of the industry.

Railroad work in this district will require a large amount of heavy concrete construction, and orders for this kind of cement work are being placed at the present time by the various contractors. Local contractors who make a specialty of heavy construction and railroad work have extensive contracts on hand, which will take at least a year to complete, and in which concrete, both monolithic and reinforced, will be important items.

Both Pittsburg and Allegheny City will use a large amount of concrete curbing this summer, as the city engineers are preparing to ask for bids for both concrete and sandstone curbing, and in view of the favorable showing made by the concrete curbing put in last summer, it is extremely probable that at least a third of the new curbing placed this year will be of concrete. This will also be in keeping with the sidewalks, for, as reported in these columns some time ago, there has been and will continue to be a large amount of this class of street sidewalks laid the coming year. In conclusion, it may be remarked that from all standpoints the outlook here for the use of cement in construction of all kinds this year is extremely bright.

Coyle & Richardson, dry goods dealers of Charleston, W. Va., are having plans prepared by Elzner & Anderson of Cincinnati for a large reinforced concrete business block which they will occupy when completed. The structure will be four stories in height, 80 by 150 feet, being the largest building of this type in that city. It will cost upwards of $60,000, and will be completed this fall.

The Payne Shoe Company, also of Charleston, W. Va., has had plans prepared by the same engineers for a reinforced concrete building which it will erect this summer at a cost of $50,000. This will be five stories in height and 60 by 123 feet in dimensions. Contracts for neither of these buildngs have been awarded to date; they will probably be built by contractors either from Pittsburg or Cincinnati.

The Dravo Contracting Company is about ready to resume work on Dam No. 5, Ohio River, below Pittsburg, on which this firm has a large concrete contract. It had been planned to resume this work some time

ago, but on account of the high water, the contractors have been seriously delayed, and instead of having it completed by the first of June as had been expected, it will not be completed now before the first of August. Work on all the dams in the upper river is well under way, but work on the new locks and dams has not been started yet.

The Hennibique Construction Company, the main office of which is in New York City, has opened a branch office in Pittsburg, in room 402 Machesney Building, which is in charge of George H. Hyde. While this concern has for some time had considerable work in the Pittsburg district, it has never maintained a local office. The company has completed its contracts on the reinforced concrete buildings on Federal street, Allegheny, for the Pittsburg, Fort Wayne & Chicago Railway and for the Adams Express Company, in both of which the "Hennibique" system of armored concrete was used. These buildings are two of the finest examples of the reinforced concrete type of construction in the city, being of particular construction on account of the unusual number of difficult angles and the extreme slope of the roof. On the former building there is also a tower of reinforced concrete 160 feet in height.

At Johnstown, Pa., another large reinforced concrete building will be erected this summer in the business portion of the city from plans prepared by Architects Wild & Rodgers of that city. The building will be erected for the new Johnstown Trust Company, and will be at the corner of Main and Clinton streets. The structure, which will be seven stories in height, will be the tallest in the city, and one of the most beautiful. Architect George Wild will have personal supervision over the erection of the building, as has been the case during the construction of the several other buildings of this type that he has planned and erected in Johnstown and vicinity.

The Bessemer & Lake Erie Railroad Company, the main offices of which are in the Carnegie Building, Pittsburg, has planned to erect a new station at Meadville, Pa. Concrete building blocks will be used for the exterior walls, and cement for the floors. The company's engineering department prepared the plans and specifications.

The offices of the Pittsburg Art Stone Company at Connellsville, Pa., have been moved from the old location to the Soisson Building, where larger and more adequate quarters have been secured. The company has a large amount of work on hand this spring, most of which is of a small and local nature, however, including street retaining walls, sidewalks, concrete curbing, lawn fences, etc. The outlook through Fayette county is excellent for a marked increase in the consumption of cement.

A large steel and concrete manufacturing plant will be built this summer at Economy, Pa., twenty-five miles below Pittsburg, by the National Moulding Company, Fulton Building, Pittsburg.

The Blaw Collapsible Steel Centering Company, Westinghouse Building, Pittsburg, manufacturers of collapsible steel centering for concrete sewer construction, has opened a New York office in room 320, Park Row Building, which will be under the management of William B. Dixey.

The contract for the construction of a three-story reinforced concrete stable to be built in Wilkinsburg, Pa., a suburb of Pittsburg, has been awarded to the Lindman-Henderson Company, 245 Fourth avenue, Pittsburg. The floor plan of the building covers 50 by 122 feet, and this will be the first instance of reinforced concrete being used in the construction of a building of this class in this district.

The Laurel Cement Block and Crushed Stone Company, Dallas, Pa., has been incorporated by Robert Ireland, Jacob S. Pettebone and John H. Jordan, with an authorized capital of $25,000. The new corporation will manufacture concrete building blocks and general concrete shapes of all descriptions for building, as well as conduct a general business in sand, cement, crushed stone, gravel, etc.

Work has been started on the construction of the new plant for the New Castle Concrete Company at New Castle, Pa. The incorporators of the new concern are: D. G. Emery, John M. Gardner, R. G. Allen, Andrew Dietterle and T. A. Johnson, all of New Castle. The company will manufacture concrete building blocks of all descriptions, and the plant will have a capacity of about 20,000 pieces daily, all of which will be moulded under a pressure of 2,000 pounds to the square foot. The plant will be one of the largest and best equipped in the entire Pittsburg district.

The contract for the concrete work on a large hotel which will be built at Altoona, Pa., this summer has been awarded to the Cambria Cement Company of Johnstown, Pa. L. F. Hinman & Sons of Altoona are the owners.

The Germania Brewing Company of Altoona, Pa., has awarded the contract for a concrete hotel which will be built in that city this summer to the Altoona Concrete and Construction Company.

CLEVELAND, OHIO.

CLEVELAND, O., May 16.—Building operations in this city are now in full swing and structures are springing up in all parts of the city. Never before has concrete and cement been so largely used as this year. After several years, during which structure concrete has been thoroughly tested and not found wanting, prejudice is giving way and builders are taking freely to this mode of construction.

The cement market is stiff at present, the demand being so great that the manufacturers have advanced prices. Some difficulty is being experienced in filling all the orders received, but it is believed that a famine in cement will be averted. The demand for sand is also keen and the sand suckers are hard at work along the lake shore and in the river beds, getting sharp clean sand for various building purposes. With the opening of navigation this branch of work has been resumed with a vigor never before noted here.

An immense amount of concrete is being used in paving the streets of Cleveland. Though the volume of work will not be as great as expected, owing to the lack of funds, many miles of Cleveland streets will be paved. The edict has gone forth from the city health department that the very best way to improve the city's health is to pave its streets. Every street already has sewers, but a number are still unpaved. It is hoped that within two or three years every street in Cleveland will be paved with brick or stone.

Although the question of material for the new county courthouse is tied up in the courts, the members of the commission are busy preparing to let contracts for marble. At a meeting on May 9 it was decided to send one member, Gen. Jarad A. Smith, on a junket through the East to examine specimens of marble. The new building will require 50,000 cubic feet of marble at a cost of about $500,000. Gen. Smith left for Pittsburg, first going to Washington, New York, Boston and Providence.

This city has decided that rather than face a lawsuit with an ex-employe it will pay Walter C. Parmeley, who was formerly employed in the sewer department, the sum of $6,000. When Parmeley was on the city's payroll he perfected a plan for the use of reinforced concrete in sewer construction. In the experimental work he had the assistance of city employes and all of his time was paid for by the city. Parmeley had the process patented in his own name. When he left the employ of the city he started a suit for $200,000 which he claimed as royalty. The city solicitor has given his opinion that Parmeley has a good claim and advised the settlement of the claim for $6,000 rather than that the suit should go to trial.

An unusual advance has been made in this city in the use of concrete blocks for foundation purposes, and the local block factories are busy turning out the plain faced blocks for that purpose. A great many new houses have these block foundations, sometimes brick to grade but more usually entirely of blocks. Some of the big allotment companies, which are building houses in quantities, have installed plants of their own for the purpose of making blocks and concrete which is entering largely into the construction of modern houses.

Work is going ahead with the Cleveland farm colony which is to house all workhouse prisoners and indigent persons of this city. At present a large gang of workhouse prisoners is busy laying concrete foundations for the buildings.

A receiver has been asked for the Iroquois Portland Cement Company by Elizabeth C. Hackenberg, a stockholder in the concern. Although the mill is located at Caledonia, N. Y., all of the directors with one exception are Cleveland people. They are H. E. Hackenberg, C. D. Richmond, H. J. Davies, A. E. Converse, Sterling Parks, J. D. Williamson, A. W. Smith, B. T. Tremaine, D. D. Dickey and M. C. Cotabish. Mrs. Hackenberg claims that the mill is worthless and that much of the stock was never paid for. The capital stock of the company is $500,000. The petitioner says that the proposition was made that the stockholders pay in $250,000 to be given as bonus to the buyers of $250,000 worth of bonds now being sold. Mrs. Hackenberg claims that if this is done the concern will never pay any dividends, but that if the property was properly managed it would pay a good profit.

The Cleveland Builders' Supply Company is having a busy season, the demand for all its products being exceedingly lively. The company is erecting a new warehouse on Berea road to take care of its increasing business.

A novel plea has been made in a suit against the Reinforced Concrete Construction Company of Cleveland, filed a few days ago by Edwin L. Marshal, the owner of an apartment house on Carnegie Ave., adjoining the construction company's plant. Marshal asks for $5,000 damages against the company because, he claims, the profanity of the workmen employed in the cement works, drove his tenants away from his apartment house. He also includes the dust and noise as contributors to his discontent.

A number of new concrete buildings have been announced during the past month, which are either under construction already or will be soon. A new concrete storage house will be erected on Ontario street near Vinegar Hill, which will cost $100,000. Another much larger and costlier storage house, constructed of concrete, is being planned for the General Cartage & Storage Company.

M. A. Bradley has taken out a permit for another $10,000 concrete building to be built on Ontario street and used for stores and manufacturing purposes. This is in addition to the $25,000 concrete power block which he has started to build on Academy street.

Masters & Mullen, structural contractors in the Rose building, are busy erecting a $24,000 concrete four-story warehouse for the Vincent Barstow Furniture Company, to be used for storage and factory purposes. It faces Vincent street in the rear of the furniture company's big warerooms. The building will be 50x150 feet in size and entirely fireproof.

A new office and store will be erected at 3356 Payne avenue for the B. T. Vendernik Company. Plans have been prepared by Architect C. E. Tousley. The building will be constructed of concrete building blocks, two stories in height and 50x30 feet in size. The contract for the blocks has been let to the Cuyahoga Concrete Stone Company. The general contract is being executed by John Goodall.

A new townhall is to be erected at Mayfield Center. This will also be built of concrete building blocks. The Cuyahoga Concrete Stone Company has secured this contract also. The hall, which was planned by Architect A. E. Keller, will cost $8,000. John Wattle is the general contractor.

They are now building schools out of concrete in Cleveland. The demand for fireproof material has brought the school authorities around to concrete as usual. Architect F. S. Barnum, the school board's official architect, has made a test of concrete blocks in the construction of school buildings. Last year it was used in the construction of the Marion and the Watterson schools for foundations and partition walls. This year the addition to the Rice school and the annex to the Brandon school will be constructed of the same material. The Cuyahoga Concrete Stone Company has been awarded the contract for this material.

W. C. Runyon of the Struthers Furnace Company, which manufactures a fine slag cement, says that business is brisk with his concern this season and that a great deal of work is under way. Mr. Runyon recently closed one of the biggest contracts ever made in this state—75,000 barrels of cement for the Carnegie Steel Works at Pittsburg at higher prices than competitors.

During the past month the Stowe Fuller Brick Company had a hearing of its charges against the Pennsylvania railroad that it was discriminating against the company in the matter of rates on fire brick from Ohio and Kentucky to eastern points. It was contended that eastern shippers could get into western markets, but that western shippers could not enter the East. The commission took the matter under advisement.

The Kelley Island Lime and Transport Company has put into commission its new $40,000 boat, the Cutler, which was this month loaded with limestone at Kelley Island for transportation to Cleveland. All of the seven other boats in the fleet are now operating. Officers of the company say that business continues good and that the car shortage has slackened up considerably. The price of sand has not gone up with other supplies but remains the same as it has been for the past two years. There is a keen demand for it. Work is progressing rapidly on the mammoth new stone crushing plant at Kelley island, which is to be the largest in the world, and which will be ready for use in the fall.

An important deal was closed during the past month which creates a rival for the Kelley Island Lime and Transport Company. The Cleveland Furnace Company and allied interests have purchased 123 acres of the finest limestone land on Kelley Island and will proceed at once to develop large quarry interests there. The company will begin at once to get out stone. It will cost in the neighborhood of $50,000. Large kilns will be erected and a line of boats inaugurated, the policy being to get some of the trade so long enjoyed on an exclusive scale by the Kelley Island Lime and Transport Company.

The Cleveland concern purchased the land with a view of establishing a field from which it could secure limestone, which is extensively used in the blast furnaces of this city. The quality of the stone on Kelley Island is said to be the finest in the world and practically inexhaustible. The Cleveland Furnace Company expects its supply to last fully thirty years. There has been practically no stripping yet and the bed of rock is twenty-five or thirty feet thick. In addition to these advantages, the property has a long water frontage which will be valuable for dockage purposes.

It is planned to eventually charter or purchase a fleet of vessels to ply between Kelley Island and adjacent ports, particularly Cleveland, and bring the stone to the furnaces. The big furnace of the Cleveland Furnace Company and the projected new one will draw from that source. Kelley Island limestone is said to be the best that can be procured for fluxing purposes.

In addition to the regular furnace limestone, there is a great quantity of lime burning stone, which turns out the finest building lime. There is also an inexhaustible supply of stone which is used for riprapping breakwaters and piers. Great quantities of this stone is used on government work in this district. The government canal at the Soo is composed of this stone.

The property was picked up piece by piece from island residents. Not since the time of Perry's victory which took place near by, have the residents of Kelley Island been wrought up to such a high pitch of excitement as they were when D. T. Croxton of the Cleveland Furnace Company appeared in their midst with a big grip of coin and notes to buy their land.

A remarkable thing about Kelley Island is that it produces a grade of stone which is not duplicated in any of the neighboring islands. Geologists have been unable to explain this, and look upon it as a freak of nature. The furnace company will proceed at once to develop its property by bringing limestone to Cleveland for its furnace.

The Cleveland Concrete Building Block Company is having a lively season. With Architect W. M. Kingsley doing nothing but planning concrete block buildings, the business is in a prospering condition. A building, 37x68 feet in size, containing stores and apartments, and composed of concrete block, is being erected for John A. Canda at Fulton Rd. and Denison Ave.

The same company and architect are erecting a residence for George Cartwright on W. 39th St., near Denison Ave. The building is 24x28 feet, two stories high and will cost $3,200.

John J. Schmitt is having a building constructed of concrete blocks opposite Garfield park on Berea Rd., which is to enclose a mineral spring. It will be 24x32 feet and two stories high. The cost is $4,000.

Dr. C. M. Simpson is spending $6,000 for the erecting of a concrete block building at W. 99th St. and Lorain Ave. It will be 37½x56 feet in dimensions and two stories high.

The same sum is being expended by Valentine Zakusek for a building to contain stores and apartments on Woodhill road. The structure will be 24x56 feet and two stories high. Architect Kingsley has the building in charge. Blocks for it will be furnished by the Superior Cement Stone Company, which has a factory at Stop 3 on the A. B. C. line, just out of Cleveland.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, TENN., May 17.—There was a slight percentage of gain in building values here the past thirty days. Weather conditions have retarded outdoor work to some extent; it has been unusually cold and the rainfall during April and May has been phenomenal. Conditions are getting more settled and June will undoubtedly be an active month.

The Cubbins Lime and Cement Company in North Memphis reports active market conditions with a very firm price situation on all building materials.

Steve Wright, dealer in lime and cement on South Third street, is pushing operations this spring on his hydraulic stone work. He has perfected his system since last season and a good percentage of work has been done along concrete lines this year, more than ever before in the history of the city. Numerous flats and residences and several small office structures represent the work in 1907.

E. F. Stephenson contemplates the establishment of a plant in this city for the manufacture of concrete building blocks, cement brick and roofing tile.

The Memphis Asphalt and Paving Company reports much activity in the southern towns on the paving question this spring. This company is among the bidders on a large paving contract to be awarded at Natchez, Miss., within the next few days.

J. Watts Kearney & Sons of New Orleans have a contract to furnish several hundred barrels of lime and several hundred pounds of plaster hair that will go to the Isthmus of Panama for the Isthmian Canal Commission.

H. C. Bancroft of Houston, Tex., was in Memphis a few days ago en route home from Chicago, where he arranged with the American Hydraulic Stone Company of Denver and Chicago, to represent them in the state of Texas, with Houston as headquarters. Mr. Bancroft has associated with him J. A. Richardson and they will open an office at Houston immediately and launch a company to manufacture blocks and construct buildings.

Missouri.

The St. Joseph Concrete Post and Block Company, of St. Joseph, Mo., has been organized with a capital stock of $5,000. It proposes to manufacture posts, blocks, bricks, etc., and to lay sidewalks, curbs and gutters. William and Jester Ozenberger and Ernest Batchelor are identified with the new company.

A hydraulic stone company has been organized at Springfield, Mo., which will manufacture in Greene county, under the process of the American Hydraulic Stone Company. Among the stockholders in the new company are: William Reps, W. S. Tucker, W. E. Jewell, A. Dark and others.

The Maryville Pressed Stone Company is completing a new factory at Maryville, Mo. Edward Forsythe is manager. The building itself will be of concrete blocks and will have a capacity of 600 blocks daily.

Nebraska.

Davis & Bryan have launched a new concrete block company at Fremont, Neb.

Reimers & Fried of Lincoln, Neb., have received a new block machine which they will use in their factory for the manufacture of sills, cornices, friezes and other ornamental work.

The Territories.

Work has been started on the plant of the Oklahoma Portland Cement Company at Ada, I. T. J. C. Back is president of the company and has the work in hand.

The Allen Brick Company has about completed its new plant at Okmulgee, I. T. The plant was moved from Chandler in order to get within the gas belt.

The Tulsa Portland Cement Company of Tulsa, I. T., capitalized at $2,500,000, will install a plant of 2,000 barrels daily output. It has organized with Beeks Frick of Fort Wayne, Ind., as president; J. W. McCloud of Muskogee, vice president; and H. C. Ashby of Tulsa, I. T., as secretary.

Kansas.

A charter has been granted the Humboldt Portland Cement Company which intends to erect a modern plant at Humboldt, Kan. The company is capitalized at $2,000,000. It owns 300 acres of cement quarry land, besides its own gas and fuel lands. Offices will be maintained at Humboldt and Kansas City. The officers are: C. H. Pattison, president; W. G. Kelly, vice president and general manager; and C. C. Quinlin, secretary.

E. J. Burke, contractor of Cherryvale, Kan., has taken a place as superintendent of the quarries of the Western States Portland Cement Company at Independence, Kan.

The Inter-State Portland Cement Company, the fourth Portland cement plan for Independence, Kan., is almost ready for business. Lands are being taken over right along. A. C. Jobes, president of the National Bank of Commerce of Wichita, Kan., is president and E. B. Skinner of Independence, Kan., is secretary.

The Kaw Portland Cement Company, composed of Fort Scott and Kansas City capitalists, has incorporated under the laws of West Virginia with a capitalization of $3,000,000 and will erect a million dollar plant within the next few months. C. C. Nelson, president of the Citizens' National Bank of Fort Scott, Kan., is president; D. P. Thomas of the same city is vice president and general manager. Hugh C. Ward, William Huttig, Ira G. Hedrick and others of Kansas City are interested.

The Salina Construction Company of Salina, Kan., using cement stone, is erecting two large buildings at Kanapolis for the Crystal Salt Works.

At a meeting of the directors of the Bonner Springs Portland Cement Company, just held in the R. A. Long building at Kansas City, Mo., the following new directors were elected: Walter B. Richards, vice president of the Richards & Canover Hardware Company of Kansas City, and Charles Knabb, president of the First National Bank of Hiawatha, Kan. The contract was let for the building of the general offices and machine shops of the company at Bonner Springs. It was decided to advertise for bids for the building of the main plant, which it is estimated will cost $800,000.

The Topeka Vitrified Brick and Tile Company has just been organized at Topeka, Kan. H. S. Andrews, Wm. Moeser, A. Rodgers and others are identified with the company. They will take over the property of the Rodgers brick plant, five miles west of Topeka on the Rock Island. This plant was established by Capt. J. S. Ernest about sixteen years ago and is the pioneer brick plant in that portion of the State. The new firm will furnish all kinds of paving and street supplies.

NASHVILLE AND THE SOUTHEAST.

NASHVILLE, TENN., May 18.—Nashville concrete and paving firms are enjoying a good business this season. The present aspect is for an even more active summer.

Mr. McLester of the Southern Bitulithic Company, when seen at his office in the First National Bank Building, said: "We are taking contracts all over the South and business looks good for the first half of 1907, with prospects bright for the remainder of the year. One of the late jobs taken is a paving contract for Columbus, one of the thriving industrial points in South Georgia."

The Granatoid Construction Company has a number of jobs in progress in the city. N. D. Overall manages the plant of this concern and it has a finely equipped place out on the West Nashville car line. It uses Lehigh, Kosmos and Red Diamond cements and has a capacity of 1,000 blocks per day.

A. E. Marrierr, secretary and sales manager of the Newsom Crushed Stone and Quarry Company, states that his company is enjoying a fine trade this spring. The factory has a daily capacity of 1,200 blocks. A short distance out from Nashville it operates a large quarry and crusher plant. Some of the handsomest residence work of this firm is in the Murphy addition, a fashionable residence district in the western part of town.

The Muscogee Brick and Terra-Cotta Company is starting up a new factory this month at Columbus, Ga. John T. Fletcher, identified with many successful business projects in South Georgia, heads the enterprise. An investment of nearly $150,000 has been made.

The Sylvan Park Land Company, of Nashville, of which J. E. Thompson is president, has just closed a contract for grading and macadamizing 6,000 or 7,000 feet of street in the Acklen Park subdivision of this city. This work will be completed in about sixty days.

Allen & Curry, brick contractors of Chattanooga, Tenn., have been awarded the sub-contract for the brick work on the million dollar Hotel Patten at Chattanooga. Their contract amounts to about $40,000.

The Tennessee Ball and Sagger Clay Company, of Paris, Henry county, Tenn., has been incorporated with a capital of $100,000 by A. D. Noe, J. M. Crowe, J. K. Waller, Harry Watkins, J. D. Abbott, J. O. Manning and others.

The Mohawk Sewer Pipe Company, of Mohawk, Tenn., has been incorporated with $12,000 capital stock by J. A. D. Haun of Mohawk; C. N. Weaver and S. E. N. Moore of Nashville, Tenn., and H. R. Brown of Greenville, Tenn.

Many concrete houses are being erected in Chattanooga and suburbs. E. R. Betterton is erecting seven on the property of the Tennessee Coffin Company, McMillan Ave., that city. They will cost about $10,000 and contain three to five rooms. W. B. Mitchell of the Chatanooga Plow Company is also erecting several concrete tenement houses.

The Montreal Concrete and Building Company has been organized by Fleming Ramseur and others of Shelby, N. C., with a capital stock of $50,000, for the purpose of manufacturing blocks, brick and tile.

J. B. Karnegay of Demopolis, Ala., has sold his plantation, consisting of 400 acres, to a wealthy corporation which will erect thereon a cement plant. The members of the purchasing firm are: B. F. A. Saylor of Rome, Ga., J. D. Riggs of Selma, Ala., O. H. P. Sample and J. L. Means of Shreveport and James Bradshaw of New Orleans. The price paid for the land was $40,000.

Chattanooga, Tenn., is to have a million dollar hotel to be known as the Hotel Patton. The excavations are about complete. The fireproofing consists mostly of reinforced concrete blocks, and everything but the partitions has been let to the National Concrete Company of Cleveland, O. The partition work will be of fireproof tile and has been let to the North Birmingham Fire Brick and Roofing Company of North Birmingham, Ala.

THE WEST COAST.

SAN FRANCISCO, CAL., May 9.—Conditions have been favorable for building operations in the line of concrete work ever since April 1. With the rainy season ended, nothing but serious strikes affecting the building trades can prevent the continuance of heavy construction work. The building permits issued in the month of April represented a total valuation of over $6,000,000, bringing the total investment in such improvements for the past year up to about $60,000,000. Although the carmen's strike has caused a lull in the letting of contracts, there will be a quick recovery when an agreement is reached, if the building tradesmen keep their heads.

The scarcity of good lime has delayed the erection of some buildings this spring, but the prices have dropped to more reasonable figures since the large dealers agreed to reduce them after they had been run up by speculators who bought heavily.

The increasing use of reinforced concrete for the construction of buildings here makes sandstone of somewhat less importance than formerly.

The new reinforced concrete, brick and granite building of the Italian American Bank, on the original site on the southeast corner of Montgomery and Sacramento streets, will not be so high as the old seven-story structure that was burned, but it will be much more substantial. The front walls of the building are faced with California granite and backed with brick. The steel frame is up for the building which has a frontage of 42½ feet on Montgomery and 103 feet on Sacramento St., with an ell extending back from Sacramento St., 137 feet. The main portion of the building will have a height of 41 feet (2 stories) and the rear ell will have a height of 50½ feet (3 stories). The rear walls of the building which are of reinforced concrete contain more material than the front.

A basement extends under the entire building. The bank will occupy all of the first floor and basement of the main building, except that part facing Sacramento St., and directly in front of the rear ell. A store facing on Sacramento St. will occupy the remainder of the ground floor. The second and third floors will be used for business offices. The floor of the banking rooms is of white Italian and Verde Antique marble. The counter partitions, screen work and wainscoting are of white Italian and Verde Antique marble and bronze. A new vault having three floors will be built. The walls, doors and ceilings of the vault will be 12 inches thick. The vertical walls of the vault are to be reinforced with half-inch square corrugated steel bars placed nine inches apart in double rows. The vault floors are reinforced by light railroad rails in addition to a double layer of corrugated bars. The offices on the second and third floors will have metal lath and cement plaster partitions. In order to leave the banking space in the first story entirely free from interior columns it was found necessary to suspend the second floor from a series of trusses. There are six trusses each with a total length of forty feet and a depth at the center of eight feet.

The granite walls of the front are massive and will be anchored to the steel frame so as to withstand earthquake shocks if necessary. One of these anchors is an angle iron extending along the entire length of the heavy granite parapet wall near its top. All the rear walls of the building are of reinforced concrete supported, above the second floor, on the steel frame. These walls have both vertical and horizontal reinforcement. The steel framework will be encased in concrete to a depth of two inches. The protection of the columns, however, will be 4 inches thick. The sloping roof of the building will be formed of a concrete slab over which asbestos shingles will be laid. The greater portion of the concrete foundation of the old building will be utilized. Mahoney Bros. have the construction contract.

The receipts of foreign cement at this port during the month of April varied but little from those of the preceding months of this year. The total for April was 122,373 barrels, March 112,300 barrels, February 118,482 barrels. There has been little change in prices of the leading brands of European cement since last month, although some goods of inferior manufacture are somewhat weaker.

The supply of domestic cement from the mills in California is still very light and prices are comparatively high.

The Pacific Portland Cement Company's additional mill, which was completed early this year at Cement, Solano county, is now enabling a larger output to be made in order to fill the large orders sold ahead.

The new plant of the Santa Cruz Portland Cement Company at Davenport, Cal., has been put in operation after long delays owing to slow deliveries of machinery, etc. It has an estimated capacity of 6,000 barrels a day and is operated throughout by electric motors, the largest ones 800 h. p. each. The power is taken from the long distance transmission lines of the Pacific Gas and Electric Company, via a special branch line 40 miles in length. The new cement mill at Davenport will be doubled in capacity with all possible speed, and it is hoped to have the additional machinery installed in less than a year. An order has been placed for additional Westinghouse electric motors for this extension of the plant. This will make the total capacity in electric motors at the mill 11,000 h. p.

The Woodruff Company is working day and night shifts on the ten-story Santa Marino building, on the northeast corner of California and Drumm streets. The reinforced concrete walls of this fine office building, at the foot of California street, have reached the third floor and will be rushed to completion.

Since the rains ceased Frank B. Gilbreth has made rapid progress on the eight-story Boyd building on the northwest corner of California and Drumm streets. It is one of the most substantial reinforced concrete office buildings under construction in the city. The cornices and building proper are monolithic; that is, they are in one piece. To make the walls absolutely secure double nuts and large washers are placed on the ends of the horizontal reinforcing bars which pass through the outer walls.

The American Biscuit Company's immense 5-story factory, which covers an area of 275x137½ feet, a massive reinforced concrete building, is now in course of construction. The walls have been run up to a height of four stories, and will soon be finished. The work has been most substantially done under the personal superintendence of Ralph Warner Hart, architect of the building. One of the finest cracker-baking plants to be seen anywhere will be installed here. An independent electric plant will furnish all of the light and power required. The building extends from Broadway to Vallejo street, fronting on Battery.

The Pacific Building, which is to be one of the largest reinforced concrete buildings in the world, has reached a height of six stories and a fair idea of its fine proportions can be had already. It is on the site of the old Flood building and occupies nearly a quarter of the large block at the southwest corner of Fourth and Market streets. It will be twelve stories in height and will be occupied by stores and offices. The American-Pacific Company has the construction contract and Chas. F. Whittlesey is the architect of the building.

The exterior walls of the seven-story West Coast Life Building have been finished by the Woodruff Company for the Timothy Hopkins estate, on the northwest corner of Pine and Leidesdorf streets. This is the finest-looking reinforced concrete structure yet erected in San Francisco. Both street fronts of the structure have large columns, monolithic with the building.

The new $750,000 reinforced concrete building, which has been commenced by the Olympic Club on Post street will be completed as rapidly as possible. The large concrete swimming pool in the basement is already in use, having been enclosed in a temporary wooden structure.

The massive brick-concrete foundations with reinforcing rods have been completed for the 12-story Class A Whitney Building, at 117 Geary street. It has a steel frame and reinforced concrete walls. There is a frontage of 112½ feet on Geary street. The front will be faced with white enameled tile.

San Francisco capitalists who are laying out a new suburban city thirty miles distant, which is to be called Leland, have planned to erect a hotel of 400 rooms. It will be five stories high and will be constructed of reinforced concrete. The dining-room will seat 400 guests.

Looking for Convention City.

BUFFALO, N. Y., April 19.—Richard L. Humphrey, president of the National Cement Users' Association, and Charles D. Watson, secretary, called on Secretary F. Howard Mason at the Chamber of Commerce yesterday afternoon and looked over Buffalo's advantages as a place for holding the 1908 convention of the association. To get the convention Buffalo must be able to furnish a large hall for the convention meetings and a large building for exhibits.

BUFFALO.

BUFFALO, N. Y., May 14.—Much moulding sand "ganister" rock used for making silica brick, and similar materials are utilized in connection with the immense iron and steel plant of the Lackawanna Steel Company, Buffalo. According to past arrangements, these supplies have been brought to Buffalo from quite a distance. At present, however, John M. Allen, general purchasing agent of the company, has invited farmers living near the plant to sell this material to the Lackawanna company.

At a recent meeting of the New York State Canal Board, State Engineer Skene submitted plans and specifications for proposed work on the new barge canal which will involve the expenditure of about $7,000,000. Much cement and stone will be used in the work.

The big sand sucker, "Major," bought by the Lake Erie Sand and Gravel Company recently arrived at Dunkirk. The big boat will be used to take sand from Lake Erie.

Plans for a brick convent and school to cost $200,000 have been prepared by the Sisters of Mercy of the Roman Catholic Church, Buffalo. The structure will be built on the site of the old Choate homestead on the Abbott road.

A concrete four-story structure will be built by Ferrara Bros., of Canastota. The building will be an apartment house. Several concrete machines will be employed in making the blocks to be used in the new building.

The county commissioners of Wellsboro, Pa., have advertised for bids for the work of laying several cement walks. One of the walks will be laid in front of the county buildings.

The Longue Point Cement Works, Montreal, Can., was recently visited by a fire which broke out during the night in the engine room of the plant. The cause of the fire is unknown.

The Canada Portland Cement Company, through R. Richardes, has bought quarries from J. H. Smith and T. F. White at Port Colborne, Can. The area involved in the deal is 65 acres and is known as the Clayton Augustine farm. On account of the limestone deposit on the property, that material will form a part of the raw product for the cement works of the company.

The Board of Supervisors of Erie county has approved plans to pave Clinton street with brick, 16 feet wide and extending from the Buffalo city line for a distance of three miles. The cost of the improvements will be about $71,000.

An ordinance was recently adopted in Lockport, N. Y., that henceforth all sidewalks in that city must be of cement, brick or stone.

Commissioner Elwood of the Public Works Department of Rochester follows the plan of buying the old concrete on the streets to be improved and after breaking it up puts it on the dirt as macadam.

Cement walks have practically replaced all other kinds in State street at Rochester. Many residents of that city recall the time when plank sidewalks were the most popular in that street. That was in 1860 and brick sidewalks, which for generations held high rank, were just coming into favor. Speaking of the change in regard to the popularity of cement, a report from Rochester says: "But the city grew and business went northward. The brick sidewalks were forced out by cement walks but not until a long fight had been waged. Not until late last summer did nearly the last brick walk disappear."

Concrete, iron and steel will be used in the new fireproof building being constructed for the Ames-Holden Company of Montreal, Can. The structure will cover an area of 31,679 square feet and will have a total floor space of 129,709 square feet. Ross & MacFarlane of Montreal are the architects. It will be a four-story structure. Almost the only part of the interior which could be classed as inflammable will be the hardwood floors covering the concrete floors. The main entrance will be in the center of the Inspector street front and will have an imposing stone doorway.

At a special meeting of the common council at Auburn held recently, sealed proposals for paving West Genesee street in that city were opened. The lowest bidder was Brayer Brothers, whose bid was $66,554.

At a special meeting of the Masonic Association of Jamestown, $8,000 was pledged for the new Masonic temple.

CHICAGO, ILL.

CHICAGO, May 20.—Construction this year is not equal to that of the corresponding time last year. The downtown district has been pretty well reconstructed during the past few years so that but few new office buildings are planned. There is a large number of warehouses and factories proposed and even a larger number in course of construction. This is the kind of building that occupies the interest of the building trade at the present time. Concrete is being used more every day, and few buildings are being erected that do not have some concrete in them.

All manufacturers of building materials report that they are busy. The small towns have come to the front and orders coming from them are greater in proportion than those of the larger places. One noticeable thing brought out in conversation with the manufacturers is the fact that they now sell much of their products through the dealers of building materials. This is a more satisfactory way of selling to all concerned and the manufacturer by coöperation finds that the results are much greater, more product being used and better prices obtained.

The H. M. Hooker Company, one of the largest paint concerns in the country with offices and warehouse at 59 W. Randolph street, has taken out a permit for a six-story warehouse and office building on Washington street, near Desplaines street. It will be 126 by 183 feet, of reinforced concrete construction, and will cost $200,000. The architect of the building is J. C. Llewelyn, 164 Dearborn street, and the general contract has been awarded to Joseph Haigh, Marquette building.

The Saxe Construction Company has been organized in Chicago with $10,000 capital stock. It will do general contracting. The incorporators of the company are: I. C. Saxe, P. H. Clinkunbroomer and A. E. Martin.

It has been rumored that the Chicago & Western Indiana Railway Company will build a new terminal station on the site of the one now standing. It is said that the station will cost about $2,000,000. The engineer in charge of the work will be E. H. Lee.

The International Harvester Company has prepared plans and is taking bids on a warehouse which it proposes to build at Grand Rapids, Mich. It will be four stories high and 100 by 125 feet in dimensions. The architect in charge of the construction is A. C. Williams.

The South Park Board of Commissioners has authorized D. H. Burnham & Co., architects in the Railway Exchange Building, to prepare plans for two buildings, one to be erected in Jackson and the other in Washington Park. The buildings are to contain club and reading rooms, assembly halls, gymnasium and libraries. It is estimated that they will cost $200,000.

The L. R. Harsha Manufacturing Company will build, at the corner of Hart and Kinzie streets, two buildings of reinforced concrete. One is to be a four-story structure, 70 by 120 feet, the other a three-story building, 40 by 90 feet, costing about $60,000. The architect in charge of the work is F. W. Perkins, 48 Van Buren street. The William Adams Company, 145 La Salle street, has the general contract.

The People's Gas Light and Coke Company, Michigan Ave. and Adams street, has leased the property adjoining on Adams street and proposes to erect an office building eighteen stories in height. The space not utilized by the company will be rented. The company has engaged D. H. Burnham & Co. to prepare the plans.

The Illinois Vinegar Manufacturing Company is erecting a large plant at 48th and Oakley streets. The plant consists of four buildings of reinforced concrete and brick construction. The foundations and floors are of concrete. The contractors in charge are Pleas & Co., in the Chamber of Commerce Building. Mr. Green, superintendent in charge of the work, said that in all about 100,000 square feet of concrete would be used. The walls are 16 inches thick and the foundations are about 6 feet deep. The largest building is the generator, consisting of one floor 275 by 125 feet. The engine house is two stories high and 153 by 125 feet. The mash building, a six-story structure, is 67 by 52 feet, and the mill building 46 by 44 feet. All the sand was supplied by the American Sand and Gravel Company, and the crushed stone by the Producers' Supply Company. Wolverine cement was used. The mixing of the concrete was done by a Chicago concrete mixer. As not all the machinery has arrived, the buildings are not yet complete, but it is expected that they will be finished some time during the summer.

The E. J. Winslow Company, at 138 Jackson boulevard, is waterproofing, by the hydrolithic system, various buildings in all sections of the country. Among the buildings in this city for which this company secured contracts were structures for Montgomery Ward & Company, American Radiator Company, Brunswick-Balke-Collender Company, Chicago Safe Deposit Company, First National Bank, Marshall Field & Company, and quite a number of others. The E. J. Winslow Company has auxiliary companies in other large cities and ships material for hydrolithic coatings with instructions which will enable others to perform the work in any section of the country. Special problems requiring special treatment are subjects of correspondence. Waterproofing performed by the E. J. Winslow Company is guaranteed by security bonds. It makes a specialty of tunnels, subways, basements and subcellars and guarantees them to be as dry as a desert and as permanent as the pyramids.

Engineer Wehrlich of the Commonwealth Electric Company, in discussing mixtures of concrete recently, said that he had been very successful with concrete which was made of a very wet mix. He stated that a roof built by him ten years ago stood just as good tests as those made of concrete of a drier mix. He advocates the use of a mixer in preference to hand mixing. In cases where hand mixing is used he suggests that a batter of the sand and cement be made, then the stone thoroughly sprinkled and dumped on the batter. The whole turned three times will give as satisfactory results as hand mixing.

S. R. Curtis of the Garden City Sand Company states that "Stonekote" has met with very satisfactory results and he has had large orders for it. Stonekote is a mixture of Portland cement made plastic and retarded mixed with white sand or white quartz. It is used for exterior work and does not contain lime. Some very handsome houses have been constructed on which it has been used. It can be furnished in any shade, and it retains its color well.

"Business is good," said C. C. Bishop of the Marblehead Lime Company, "though the past few weeks have eased up some." This company is putting in a hydrating plant, the design of the Kritzer Company. Work is being rushed on it, as they realize that hydrated lime is the thing.

A. L. Beck, president of the Oklahoma Portland Cement Company, was in Chicago recently. When seen by the ROCK PRODUCTS man, Mr. Beck said that the company's plant at Ada is nearing completion and showed some views he has taken of it. Nearly all the machinery is on the ground and it will be but a short time before the plant is in operation. It will manufacture O K brand of Portland cement.

"We are busy at our plant," said Burton Atwood of the Atwood-Davis Sand Company. "While building operations are not as heavy as they were, still there is a large amount of concrete paving being done. The R. F. Conway Company, one of the largest concrete pavers in the country, has recently decided to use crushed gravel in place of crushed limestone for streets. This is a very important move, as this concern alone uses about thirty cars per day. Crushed gravel is being used more every day for concrete purposes and architects and contractors are specifying it more and more."

Thranstrom Bros. & Anderson are putting up another plant for the manufacture of concrete blocks at Avondale. Their plant at Summerdale avenue and Clark street is busy.

W. S. Hotchkiss of the Hotchkiss Concrete Stone Company states that business has opened up in splendid shape this spring. They have several large orders on hand from the various railroads to furnish cement conduit pipes. Their sand and gravel plant at Warrenville, Ill., has the contract for furnishing the town of Wheaton, Ill., with gravel, and their entire output is taken. Mr. Hotchkiss says that they are making several improvements in their equipment and are in the market for cars used for conveying concrete blocks, also for an industrial track.

Everitt W. Hogle, secretary of the Illinois Masons' Supply Association, is at work on the 1907 directory of building material dealers in the state of Illinois, which is issued in conjunction with the Illinois Lumber Dealers' Directory. Mr. Hogle states that he has secured several new members lately and the association is growing fast, both in membership and influence. Several requests for membership have come from dealers located in other states, and the association is considering the advisability of extending its lines to surrounding territory.

The Elk Cement and Lime Company, whose plant is located at Petoskey, Mich., has an office in Chicago where President C. A. Whyland directs the affairs of the company. Mr. Whyland reports that the warehouse that they have been constructing at Milwaukee, Wis., is now complete. The building is located on Vogel's Island and is 150 by 100 feet, one story high and has concrete foundations. Besides having dockage facilities, it is on the line of the Chicago, Milwaukee & St. Paul Railway. As the mills of the company are on the lake, a large portion of the product is shipped by water. The company's market is in Wisconsin and Minnesota. The warehouse at Milwaukee was established so that they could carry a stock on this side of the lake and supply their trade more promptly. Shipments are made by boat four times a week. During the shutdown this winter they completely overhauled their machinery and doubled their capacity so that they now manufacture about 1,200 barrels per day. They installed a complete set of F. L. Schmidt & Co.'s grinding machinery, which Mr. Whyland says he considers the best on the market. The old grinders have been taken out and tube mills and kominuters installed. "We have had no difficulty in selling our entire output this spring," said Mr. Whyland, "and we believe that this condition will keep up the rest of the year."

The Universal Portland Cement Company has moved its offices from the Rookery Building to the fourteenth floor of the Commercial National Bank Building. It now has larger and more commodious quarters. This building is not yet complete but is considered one of the finest and most modern structures in Chicago.

Robert B. Dickinson of the Marquette Cement Manufacturing Company has just returned from a two months' trip through California, where he visited all the large cities. Speaking of concrete and cement conditions, Mr. Dickinson said that there is a large number of buildings being constructed of reinforced concrete. The cement mills on the coast are all busy and have more orders than they can fill, consequently there is a large amount of cement imported to take care of the demand.

The United States Crushed Stone Company is adding to its crushing plant at McCook, Ill., two Austin crushers, one No. 2 and one No. 3a.

The Limene Products Company of Chicago has been incorporated for $5,000 to quarry and deal in stone and its products. The incorporators are D. W. Scanlon, Herman P. Haase and Lesa Williams.

The Chicago Concrete Machinery Company, which recently removed to new and enlarged quarters at 20 South Canal street, has had wonderful success with its concrete mixer, which, while it is one of the latest machines of its kind in the market, has met with great favor. W. J. Rosebery, Jr., who was recently honored by being elected secretary and treasurer of the company, has charge of the local office and is the right man in the right place. He is an accomplished salesman, thoroughly conversant with the requirements of the trade, and has succeeded in placing this mixer in spite of the strongest competition. In this connection it is timely to call attention to some of the superior features of this machine. In the first place it is a batch mixer which does not tilt to discharge. Being light and portable, it can be set up and put in operation in a few minutes. The wearing parts are protected on the discharge side by a steel apron. The outer form of the drum is cylindrical, but deflecting blades are riveted across the corners which give the inner drum a cubical formation, combining cube and rotating drum movements with the blades. The material in the drum is rolled over and over with each revolution, at the same time receiving a strong alternating sidewise movement and being completely disintegrated by the action of the blades. It is pointed out that the chief feature of this popular machine is convenience of discharge, as either a very small part or the entire batch can be discharged at will. Being set near the ground, it is convenient to load and it keeps on working whether the men are loading or discharging. Much needless shoveling is thus avoided as the mixed material goes directly into wheelbarrows or carts, whereas most of the mixers dump the batch on the ground. This feature appeals strongly to paving and sidewalk contractors. The machine is mounted on trucks or skids and is furnished in various sizes and capacities with gasoline, steam engine or motor connected, the engine being housed where gasoline is used. It is simple and durable in construction and as designed represents much study and skillful workmanship.

The Berkshire White Lime Company has been incorporated at Great Barrington, Mass., with G. W. Dunklee of Brookline, Mass., president, and E. B. McKim of Jamaica Plains, as treasurer.

THE TWIN CITIES.

MINNEAPOLIS, MINN., May 14.—The backward spring is having but little effect upon building, and work is progressing well and all lines are enjoying satisfactory business. Labor troubles, however, are threatening in various directions. Matters have been under negotiation for some time, and the trouble was supposed to have been settled. The carpenters of Minneapolis demanded a raise, and after a strike had been fairly started, a settlement was arranged through the good offices of a committee from the local association of retail merchants. This was supposed to have settled matters, and a feeling of relief ensued, only to be upset by an announcement that sheet metal workers were pugnaciously active in a demand for more money. This situation makes the outlook unsettled, and tends to discourage work which, under more settled conditions, might be carried on. There have been a number of large projects deferred on account of high prices of materials and unsettled labor conditions.

The late spring has prevented the brick yards from getting into operation as early as usual, and stocks are low. Some yards have been selling culls and bats which ordinarily would not be considered, but owing to the demand, they have been taken without question.

The concrete block business has settled down to a quiet existence, and little is heard of it since the novelty has worn off. This does not mean that they are not being used, for they are, but that they are not receiving so much public notoriety. Block manufacture is evolving from an experiment to a science, and blocks are constantly improving, and those that are now rejected would formerly have been regarded as good. There is also more use of concrete construction, monolithic walls for foundations than formerly, and many dwelling foundations are now of concrete instead of rock construction.

The Thompson Sandstone Quarry Company of St. Paul is a recent incorporation, formed for the purpose of producing and marketing building and paving stone. The incorporators include W. R. and F. X. Duxbury and A. W. Thompson of St. Paul and C. O. Lundquist of Minneapolis.

The George H. Lawes Company of St. Paul, a well known building material house, has secured new quarters for both the St. Paul and the Minneapolis offices. In St. Paul the new quarters are on the sixth floor of the Ryan building. In Minneapolis they are on the fifth floor of the Kasota building. In each instance the office is on the same floor as that of the Builders' Exchange.

The New Ulm Stone Company of New Ulm, Minn., has started its crushers on the red stone for which the company is noted, and anticipates a larger season than ever.

Clark & McCormack of St. Paul have bought a granite quarry at Rockville, near St. Cloud, Minn., and have begun operations.

J. I. McLimans of Sherburn, Minn., has invented a cement tile machine which, it is claimed, will produce cement tile at a cost of $3 to $4 a thousand. Seven men are required in its operation and the machine has a capacity of 4,000 to 5,000 tiles per day.

The problem of finding occupation for the prisoners at the workhouse in Minneapolis is again up before the board. There is brick clay available there, but the proposition to make brick for use in the city sewers previously raised considerable complaint and would probably do so again. The use of prisoners in breaking stone has been discontinued because the residents adjacent to the workhouse complained of the spectacle of a column of prisoners, guarded by armed men, marching past their homes to and from the stone quarry. The brick proposition will also meet with objection from the unions and from local brickmakers.

Johnson & Jackson of Minneapolis, dealers in building materials, have issued a set of cards, each presenting some particular item of their specialties, and the whole bunch tied together with colored ribbons.

E. H. Cobb of Minneapolis, sales agent of the Menomonie Hydraulic Press Brick Company, is on a month's trip to various points on the Pacific coast.

Fowler & Pay of Mankato, Minn., are putting out a new article, which they call "Bricklayer's Cement," specially prepared for use in stone and brick masonry. It is made of hydrated lime, ground with calcined cement rock to a uniform mixture. It is ready for immediate use and makes an excellent cement.

Rufus Parker Mathews of St. Paul, the inventor of the Mathews gravity carrier, died recently, aged 66 years. The gravity carrier is a practicable and successful device for loading or unloading brick and other articles, and consists of a set of rollers set in ball bearings, upon which the brick or other articles move.

NEW YORK.

While there has been a decided lull in building operations in New York this spring, due to many causes, but most prominent of which are undoubtedly the stringency of the money market and the prevailing bad weather conditions, there is no sign of retrogression about the cement industry. Manufacturers of this popular article find no complaint to make about the present volume of trade and predict an output in the United States much larger than that of any preceding year. The excessive demand which would have been occasioned by a favorable spring would have amounted to nothing less than the swamping of manufacturers in orders and calls on contracts. Even under present conditions some of the largest manufacturers find themselves struggling to keep pace with the incoming orders continually overflowing their books.

There is a great deal of work inside of New York which is necessarily retarded by unfavorable weather conditions but in spite of all obstacles much has been done in the way of foundation work, railroad work, sidewalks, etc. Every favorable opportunity has been seized and work pushed forward to rapid completion.

As a general rule, builders supply people have all experienced a more or less dull season as compared with the same period last year but every one looks forward hopefully expecting to see wonderful improvement in conditions following good weather. Prices on lime, cement, etc., remain good and there is no visible change in them.

May has proved a far more prosperous month than its predecessor. The gain is clearly manifest in the increased number of building projects announced, and in spite of all pessimistic feeling concerning hard times and the end of prosperity, the building trades as a rule predict a very successful and busy year.

Thompson-Starrett Co., 49 Wall street, has been recently awarded the general contract for the erection of the six-story Masonic Temple at Washington, D. C., which will cost about $350,000. Wood, Donn & Deming, 808 Seventeenth street N. W., Washington, are the architects. Thompson-Starrett Co. are also engaged in erecting a summer home for John D. Rockefeller.

A contract for the general construction of the new theater to be built at West Madison and Green streets, Chicago, for Hyde & Behman Amusement Co., of Brooklyn, has been let to The Wells Bros. Co., 160 Fifth avenue. Dodge & Morrison, 82 Wall street, and Francis M. Barton, Chicago, are associate architects. The structure will cost $250,000.

Frank E. Bryant, a farmer living near Le Roy, N. Y., has gone into the business of manufacturing cement brick. He has bought a full outfit of machinery consisting of molding machines, mixers and trucks and is now operating a full fledged brick factory on his farm. He owns a very valuable deposit of sand and gravel and is making 20,000 brick per day. The farmers of the immediate neighborhood are his customers and take all the brick that the factory turns out.

American Cement Waterproofing Company, Camden, N. J., has been incorporated with a capital stock of $50,000 by C. A. Warner, M. Fitzgerald and G. H. Liebare, all of Camden.

David L. Tomey, general contractor, Brooklyn, N. Y., has been awarded the contract for constructing the foundation for the new lighthouse at the end of the Harbor of Refuge at Lewis, Delaware. The foundation will be forty-six feet in diameter, of reinforced concrete. Contract price $15,000. Major Flagler, U. S. Engineer, says the lighthouse will be completed and occupied within the year. Contract for the steel frame work has also been let to the Champion Iron Works of Canton, O.

The Empire Concrete Company has been incorporated at Buffalo, N. Y., with a capitalization of $15,000. The incorporators are George H. Hayes, Frank J. Lahiff and Harry E. Montgomery of Buffalo.

Frank Mecas, Lehigh township, Wayne county, Pa., has a contract to macadamize seven and a half miles of road; cost will be $46,000.

Quarries.

Wants Washed Stone as Specified.

Engineer Gregory, in charge of the Sewage Disposal Plant at Columbus, O., has rejected large quantities of the crushed stone furnished by local quarrymen because it was not washed before delivery according to the specifications. Quarry operators claim that they have tried to wash the stone but found it to be impractical with the equipment at their disposal. The Board of Service has been investigating the matter and visited all of the quarries adjacent to the city of Columbus, as well as those located at Delaware and Marion. The stone producers protest that Mr. Gregory has been unreasonable in his demands and unfair in the rejection of their stone.

On the other hand Mr. Gregory, in charge of the extensive concrete operations at the Sewage Disposal plant, stands by the specifications, as drawn up previous to the letting of the stone contracts. His reputation as an expert concrete engineer being at stake in bringing this mammoth job to completion, he insists upon the importance of having all of the stone delivered exactly according to specifications. None of the crusher plants in the vicinity of Columbus have ever provided for the washing of their crushed stone and screenings. And such washing as they have attempted is said to be a mere makeshift.

The People for Good Roads.

It is significant of the attitude of the public mind on the matter of road improvement in the state of Pennsylvania that the only argument used against the proposition to amend the constitution so as to permit of a $25,000,000 road loan was that the organization of the road building department might not have been enlarged sufficiently to enable it to tackle so great an undertaking to the best advantage. The idea of spending so much money on the state roads does not appear to be repugnant to any one.

The same principal applies practically to all of the states. The people of this country are eager to get out of the mud and the rut, and they stand ready to sanction the cost of accomplishing the great improvement. The next legislature of Pennsylvania will certainly find a way of taking care of the road problem in that state, and the same kind of a question will come up in Ohio, Indiana, Illinois, Michigan and several other western states, as fast as it becomes practicable. That unseen power that we call "the people" stands for good roads, they foot the bill, and they always get what they want.

"One of the Finest."

Geo. H. Davis of Beatrice, Neb., turned on the steam in his new stone crushing plant, located one mile east of Wymore, Neb., on Saturday, May 11, for the first time with the view of commencing actual operations, and everything went as smooth as a ribbon. The location of the plant and quarry is ideal so far as it being convenient for shipping facilities is concerned, as both the Burlington and Union Pacific lines of road pass within a few feet of the crusher and both roads have granted extensive sidetrack privileges, so there is at present and under construction 5,200 feet of siding. The plant itself has been erected across the Union Pacific siding which tracks will have a capacity of forty cars and which, when loaded, move under the storage bins by gravity.

The storage part of the building is 16x36 feet and is 56 feet to the top of it from the railroad track. It is divided into four bins to store the four sizes of manufactured material, and its floor is made of 2x12 lumber set up edgewise. The other part of the building containing the crushers is 28x32 feet and is constructed to correspond with the heavy machinery it contains. The building housing the engine, boilers and coal supply is constructed of brick.

A No. 5 Austin crusher, weighing 36,000 pounds, is the central figure of the equipment. It requires thirty-five gallons of oil to lubricate it. Its capacity is a ton of rock a minute, 60 tons an hour or 600 tons in a working day, which gives this one machine an

output of fifteen cars of 80,000 pounds capacity daily. The old crusher plant, having one-fourth the capacity of the new crusher, is also doing service, but is used as a secondary machine to handle the tailings from the big new crusher.

Mr. Davis has provided a large number of different sized separating screens so that he can cut out the larger sizes if he so desires. It will require twelve dump carts to feed the hungry maw of the big crusher.

The motive power is furnished by a 65 horse-power Brownell engine, while the boilers are furnished with water reservoirs and secondary heaters, the exhaust steam being utilized to heat the water before it is injected in the boilers so that fuel waste is reduced to the minimum. The water is drawn from a well 700 feet distant, the pump in which is operated by a cable.

The real estate on which quarry property and crusher plant are located is owned by Mr. Davis and comprises thirty-seven acres. There is a depth of forty-two feet of good valuable stone, one ledge of which is ten feet in thickness. The quarry has been worked now for five years and less than one acre has been cleared off, which shows that it will require a good many years to work up the material in sight.

Below this forty-two feet of valuable stone there is a soft soapstone or clay of great depth which is yet to be developed. The quarry is well equipped with buildings, including a powder house, built in the hill, to hold a carload of explosives, besides a tool house and a new building has just been fitted up for the night watchman. Several tenements for the families of quarrymen are located nearby.

Elmer J. Deck of Easton, Pa., has purchased a tract of quarry land near Perryville, Md., for the purpose of opening a quarry and erecting a crusher plant.

The Board of Public Works at Milwaukee, Wis., recently rejected all the bids for the repaving of a number of streets because they were all too high. The contractors stated that it was necessary to bid higher than formerly as the price of crushed stone has gone up.

C. B. Whitmore Company, Lockport, N. Y., has been awarded the contract for all of the ballast of the Lockport and Rochester trolley line, which is now under construction. This contract will practically consume the output of their plant for the present season.

Frank Reeder, Jr., Robert W. Bowlby and F. C. Rockefellow, Easton, Pa., have organized the Pennsylvania Limestone Company for the purpose of operating a limestone quarry.

The Interstate Limestone Company, Newcastle, Pa., has been organized with a capital stock of $75,000. Incorporators are Geo. W. Johnson of Newcastle, Pa., Robert Bentley, Joseph G. Butler and Charles M. Crook of Youngstown, O. The company will conduct a quarry business with first-class crusher equipment.

Cook Stone Crusher plant, Painville, Conn., is now about completed. A modern crusher has been installed with a 250 horse-power engine. The additional equipment will make possible an output of about 1,000 tons of crushed stone per day. This quarry is now the best equipped and most complete in the state of Connecticut. The demand for its product constantly increases because it is considered the best road making stone available; besides this, the wonderfully increasing use of fine screenings by concrete contractors has created a practically new demand for crushed stone in very large quantities. The quarry is located in the heart of a district that demands immense quantities of fine crushed trap rock and the enormous increase in the capacity of the plant is well taken care of.

A circuit judge of St. Louis, Mo., has issued an injunction restraining the Bambrick Bros. Construction Company from operating its quarry within the city limits in such a manner as to make unsightly the adjoining property or to shake any of the adjacent houses by blasting. No doubt this will seriously inconvenience the successful and profitable operation of the quarry, for no one has ever heard of a decorative feature around a quarry, nor is there any known method to change the powerful sound and the jar of blasting into the dulcet murmurs of the lute and the measure of the cotillion. Perhaps the petitioner can suggest some means of making the quarry operation more acceptable, and if the petitioners first moved to the quarry it is up to them to "turn around and walk right out again," but if the petitioners were there first no doubt the quarry will have to be operated by their permission at any cost.

Modern Explosives in Quarry Work.

From a paper by J. Seibt, quarry engineer, published in the Zeitschrift für das Gesamte Schiess- und Sprengstoffwesen, October 15, 1906.

We read every year of a large number of accidents arising from the practice of blasting in quarries, and generally due to careless handling of explosives, but occasionally occurring even when the greatest care has been exercised. In the latter case the accidents must be attributed to the inherent danger of explosives, of which three kinds are commonly employed in quarry work, i. e., black powder, dynamite and the so-called safety explosives.

Black powder has been known and employed for the longest time; it is specially fitted for blasting operations in which not only the disruption of the rock is sought, but also where a particular form of block, suitable for squaring up, is required. Most of the other kinds of explosives have the result of breaking up the rock in all possible directions, producing a shattering effect which black powder does not cause, by reason of its slow rate of deflagration, whereby the rock is merely torn asunder in one particular direction. There are, however, several disadvantages in the use of black powder. In damp weather and in wet boreholes powder is a very inconvenient explosive. Its extraordinarily easy ignition is also sufficiently well known—even a weak blow or pressure, slight friction, a spark from the works, high temperature, or even too warm a borehole being sufficient to cause a premature explosion; also insufficient care in storing, or want of precaution during transport, have caused many a disaster. Most of the accidents, however, with black powder have been caused during the operation of boring out or in fuse firing, and often owing only to the friction of the moving rock.

The discovery of dynamite about forty years ago without doubt rendered available a more convenient explosive if we look only at explosive strength. An advantage of dynamite over black powder is above all its indifference to wet or damp; in fact, water itself has often been used as tamping, and dynamite can be advantageously employed for sub-aqueous explosions. Thus in 1904 the Sixth Pioneer Battalion in Klosterneuburg blew up a rock in the Danube by the so-called Lauer method—that is to say, by laying down dynamite cartridges from a specially-built vessel by means of an iron tube and firing them by electricity without removing the vessel. Such a method of blasting is so much the more effectual, as dynamite has the property of striking downwards. In other respects, however, the properties of dynamite are unfavorable. The great danger of this explosive is everywhere recognized and has called forth the dynamite laws of the past ten years. Quite insignificant mechanical influences such as shock, vibration, friction or rapid temperature changes can cause dynamite to explode. Moreover, it freezes at a temperature of 8 degrees R., and in that condition can no longer be used, since the nitro-glycerine becomes crystalline and the substance deflagrates with the slightest friction. The thawing of dynamite cartridges, which must be done in properly-constructed warming apparatus, is not without danger, and the practice of many quarrymen of thawing them in the pockets of their trousers is inexcusable and has often given rise to serious accidents.

In quarrying soft rocks, such as gypsum, soft sandstone or limestone, dynamite cannot be used for blasting on account of its too violent action, its disruptive force being thrown away in soft material. It is therefore more suitable for hard stones such as granite, syenite, diorite, porphyry, etc., which can oppose corresponding resistance and enable the full force of the explosive to be usefully employed. The most important source of accident from explosives, as mentioned above, is that which arises from the carelessness which workmen, too accustomed to the dangers of blasting, are wont to exhibit. This can only be remedied by careful regulations and the appointment of responsible shot-firers — a proceeding which is not always economically possible, especially in small quarries.

Not long ago there was an outcry in the technical quarry papers in favor of tamping with fine sand as the only means of removing the dangers of shot-firing. Much was then written both for and against sand tamping—a practice which had, in fact, existed for more than 100 years. In spite of some advantages, however, this method has its drawbacks. When using powder it frequently happens that the tamping is merely blown out and the effect of the shot is wasted. Powder requires, by reason of its slow rate of deflagration, a more solid tamping, such as clay or rammed earth. With dynamite, on the other hand, it is sufficient to use any good medium to shut off communication with the air, and sand, water or snow can be so employed, since the "brisant" properties of dynamite do not require such compact tamping.

Better results as regards the diminution of blasting accidents would follow from the abandonment both of black powder and dynamite in favor of safety explosives, which, with relation to their composition, represent the most complete development of the explosives industry. These have come into the market under a variety of names.

As substitutes for black powder may be mentioned petroklastite (or haloklastite), consisting of a mixture of sodium nitrate, sulphur and coal pitch, and made by the Westfäl.- Anhalt. Sprengstoff-Akt.-Ges., in Berlin; blasting nitre, made by the United Köln-Rottweiler Powder Factory, in Köln; cahucite, made by the Louis Cahue Company, manufacturers of safety explosives at Neumarkt.

The ammonium nitrate explosives consist mainly of that salt mixed with various substances, such as pitch, resin, oil, flour, coaldust or explosive compounds, such as nitro-compounds of benzol and naphthalene, nitroglycerine or guncotton. These form substitutes for dynamite. Amongst them may be mentioned roburite, donarite, westfalite, astralite and fulmenite, anagon blasting powder, dahmenite, vigorite, etc.

The great advantage of safety explosives is everywhere recognized. They are far safer to handle than powder or dynamite. Nevertheless it was in boring out a petroklastite shot that an explosion occurred in consequence of sparks, so that in this particular case the danger does not seem to have been much less than with powder. Yet petroklastite may be advantageously employed for the extraction of large blocks, because its shattering effect is smaller than that of powder.

Safety explosives generally burn, when thrown on an open fire, slowly and without energy. Friction, concussion or percussion do not cause them to explode. In consequence of this freedom from danger the carriage of safety explosives is accepted in any quantity by transport companies at ordinary rates. For this reason quarry owners need not lay in large stocks, since stores can be replenished in the quickest and cheapest manner. A further advantage over powder is that safety explosives require in proportion to the size of the block to be extracted a smaller width of borehole, since they are more powerful in their action. This diminishes the labor of drilling. In comparison with dynamite the reverse, of course, holds. As a further advantage may be mentioned the resistance of safety explosives to frost. Especially is this the case with the ammonium nitrate explosives, which have not been found to freeze even in the coldest seasons. The troublesome smoky fumes are also partly diminished and are not so objectionable as those from black powder, since they consist mainly of nitrogen, oxygen and water vapor. In the same way the great dangers of ignition by heated rock walls in the case of chamber blasts is diminished.

Against these advantages may be set the sensitiveness of safety explosives to damp, an objection which is partly obviated by packing them in good watertight cases. Moreover, the quarry manager is able, on account of the greater transport facilities, to lay in his supplies in small quantities, sufficient to last for, say, four weeks, so that the risk of exposure to damp becomes minimized. A further disadvantage may be found in the fact that safety explosives are more liable to scatter the rocks than in the case of black powder, and workmen's dwellings and other buildings in the vicinity where blasting is carried on stand, therefore, more chance of being damaged.

On the whole, in spite of these drawbacks, quarry-owners are seriously urged to use only safety explosives for blasting purposes, since the advantages—and especially the freedom from danger—are so weighty that other considerations may be neglected. Experience has demonstrated that safety explosives give very satisfactory results in practice. If at first failure should occur—which generally will be due only to want of knowledge of the special properties of new explosives—it is not necessary on that account to be discouraged. Other kinds can be tried, or the manufacturers can be communicated with; and the latter, in their own interest, will gladly look into the cause of the failure.

The quarry owner must also bear in mind that a diminution in blasting accidents will mean also in time a gradual decrease in accident insurance premiums.

Castalia Stone Company, Sandusky, O., has been incorporated with a capital stock of $50,000. They will conduct a stone crushing and road contracting business. A complete crusher outfit is already on the tracks at the site that has been selected for the erection of the plant. It will be installed without delay, as it is said that the company has already secured extensive contracts.

Lime.

The National Lime Manufacturers' Association

Meets Semi-Annually.

Peter Martin, Huntington, Ind	Presiden
A. A. Stevens, Tyrone, Pa.	First Vice President
W. B. Carson, Riverton, Va.	Second Vice President
T. H. Fleischer, Sheboygan, Wis.	Third Vice President
C. W. S. Cobb, St. Louis, Mo.	Treasurer
E. H. Defebaugh, Chicago. Ills.	Secretary

Official Organ, ROCK PRODUCTS.

Lime Reciprocity.

Once upon a time it was easy to make lime and sell it to your neighbor, but as the demand broadened the number of kilns increased, competition grew stronger all along, and the price in some sections became lower. In many sections, however, manufacturers are able to control the price; they believe in coöperation. They recognize that while they may be pretty fair lime burners they have no mortgage on the limestone hills. That being the case, the word "reciprocity" was discovered, and a friendly exchange of ideas from time to time has helped men in this line to get more money out of their kilns.

To illustrate how they feel in the matter, ROCK PRODUCTS got a letter the other day from a lime manufacturer, who said: "I am under the impression that my prices are too low in certain territory. I do not know the competitors in that field very well and would like to know from you whether my prices are too low or not. If they are, I want to raise them. In other words—I want to be in line; want to sell to the dealer, and sell at a fair price, but want just as much for my lime as anybody else because it has all the good qualities of a white, strong lime and can be shipped promptly. I believe in full weight and good cooperage; and if you will put me in communication with brother manufacturers, will get in line; that is the only way to do business nowadays."

Naturally it did not take ROCK PRODUCTS long to satisfy the gentleman as to conditions prevailing in the territory mentioned and as a result prices are in line in that field. If there could just be more of this information going back and forth between manufacturers doing business in any one territory, or in two fields where manufacturers help each other, it would mean more money for everyone.

Because things are so much better than they were a few years ago, a condition due to the National Association, there is all the more reason for continuing along modern lines and exchanging notes on how to get more money out of the lime business.

The Man With a Message.

The services of A. J. Whiteford of Toledo, O., have been secured as traveling secretary of the National Lime Manufacturers' Association. On this page we print his picture by way of introduction, for he will make a personal canvas of the lime manufacturing interests and we want you to know him when he arrives and give him the glad hand. He has a message from the National Lime Manufacturers' Association, which is composed of the most enterprising manufacturers in this country. What he has to say will have a direct bearing upon the future developments of the lime industry and is incidentally of benefit to every man who quarries lime rock and burns it in kilns.

The association has undertaken a great work, not for the selfish benefit of the men who have always been in the front ranks of association effort, but the doors are open wide and there is a hearty invitation for every manufacturer of lime to enter the fold and share in the benefits which they have already developed by associated effort and which they are still producing along the lines of education looking to the improvement of methods both in the way of economies at the manufacturing end and the improvement in the handling and marketing of the product.

When Mr. Whiteford makes his call at your place of business we want you to understand that we consider that it is a day of opportunity for you. You are invited to draw your chair up to the ample board of the association and share in the benefits which they have provided, and in which they need your coöperation.

Lime As a Fertilizer.

Greek and Latin writers tell us that in the days of Pliny lime was known and used as a fertilizer, and its employment for this purpose can be traced down to the present time. True it is that when commercial fertilizers were introduced they took its place to some extent, but at the present time there is a great renaissance of lime and it is crowding them out. Modern inventions in preparing lime, the machinery through which it is handled, the science which makes its functions plain—all contribute to place it in the very front rank and to make it the strongest competitor of acid fertilizers.

Mineral matter is necessary to the growth of plants, some minerals are absolutely indispensable to their full development—magnesia, potash, iron, phosphoric and sulphuric acids; lime is the solvent of all these, so that if it be absent, the others may continue dormant, instead of contributing their full meed to the development of the plant. When lime is abundant in soil, vegetable life is more vigorous and fruit is more abundant, while the same plants, in an environment deficient in lime, would be frail and less prolific.

MR. A. J. WHITEFORD, TOLEDO, OHIO.

The fertility of the soil on a large proportion of farms has been exhausted by improper methods of farming, lack of knowledge, etc., so that many agriculturists have found it necessary to use commercial fertilizers to enable them to bring forth even an average crop. They are now looking for something more enduring in its effects than phosphate, for a substitute that will cost less, and surpass it in results. Undoubtedly lime is the desideratum in producing abundant crops, and putting new life into the soil of worn-out fields. It has been shown that one ton of timothy hay contains ten pounds of lime; a ton of clover contains forty pounds; a ton of wheat straw, seven; a ton of oats, nine pounds, and that where lime is deficient in the earth, these important factors in the farmer's product fail to mature as they would if the element they need were supplied.

No Limit to His Capacity.

Under date of May 16 Peter Martin, president of the Ohio & Western Lime Company says: "Business in the building material lines generally has been dull the last ten days. This applies to the cement business as well as the lime business. We have installed an air separator in our hydrating plant at Huntington and are now using an improved system of slaking which doubles our hydrating capacity. At Bedford we intend to build three more kilns and get them in operation within a very short time. The Ohio and Western Lime Company is one of the largest lime manufacturers in this country. We are fairly supplied with orders and have everything in readiness for a big season's business."

Mr. Martin, in his capacity as president of the National Lime Manufacturers' Association, has been giving a good deal of personal effort to getting the work decided upon at the last convention, held in Columbus, Ohio, in practical operation. Mr. Martin is a busy man and besides this he has recently been suffering with his eyes to such an extent that he can not work as hard as his inclination would otherwise permit of his doing. Nevertheless he has given a considerable portion of his valuable time to the association work which should be appreciated by the members.

The Ft. William Lime Works of Ft. William, Ontario, will shortly build two new kilns.

If you haven't decided to put in a hydrator you are overlooking opportunities. Can't you tell the way the wind is blowing?

The Hoosac Valley Lime and Marble Company is building a new kiln at Zylonite, Mass. Material is already on the ground and the work will be pushed rapidly.

The New England Lime Company of North Adams, Mass., is busy on the foundation for its new kilns to be built at the Zylonite plant; they will be operating in the early summer.

Frank M. Williams of the Northwestern Lime Company, St. Paul, Minn., was lately found dead in bed at his home. Mr. Williams was a sufferer from bronchial asthma, which caused his death.

The Consumers' Lime Company has filed articles of incorporation at Oakland, Cal., giving its capital stock as $10,000. F. B. Ladd, H. H. Linnell, E. Bademann and H. A. Potter are directors.

A. M., G. R. and John Wilson have formed a company at Wenatchee, Wash, for the purpose of manufacturing building lime. A kiln on the Columbia river, and eighty acres of land have been purchased, which will yield a good supply of material.

The Knickerbocker Lime Company, Philadelphia, Pa., is putting in an extensive hydrating proposition.

Halsam's Lime Works, Scranton, Pa., are booming their oyster shell lime for fertilizing purposes as they always do at this season of the year. It is rich in potash, soda and phosphoric acid. Lime is cheaper than commercial fertilizers that often sell for $30 a ton.

The Great Western Sugar Company has been operating lime quarries fifteen miles from Ft. Collins, Colo., for more than a year, the limestone being used in the chemical process of producing sugar from sugar beets—and it has now incorporated this branch of the industry as a separate concern, capitalized at $15,000; its directors are all connected with the sugar company; the new branch will be known as the Engleside Lime Company.

Representatives of the American Lime and Stone Company, Tyrone, Pa., have been in Martinsburg, W. Va., recently, looking over their new property in that district. They own a large tract of the best limestone in Berkeley county, and will develop it thoroughly. It is thought that quarries will be in operation in two months or less, and the kilns by fall. After developing the stone and lime departments, a cement mill will be added.

The Ash Grove White Lime Association of Kansas City, Mo., has reorganized under the name of the Ash Grove Lime and Portland Cement Company, adding a very important branch to its business in the shape of a Portland cement plant at Chanute, Kas., with a capacity of 2,500 barrels. The new field of operations will be in the very center of the gas country about Chanute and it will be surrounded by the most advantageous conditions possible for the production of Portland cement.

Geo. B. Stevens, sales manager of the American Lime and Stone Company, in writing from its Tyrone, Pa., office, reports the demand for chemical lime this spring as very great, and says his company has had some little difficulty in filling orders on account of labor conditions, and has recently made a general advance at all its quarries, both for contract work and day labor. A new machine for making barrels with steel hoops has also been installed. Mr. Stevens says his concern has shipped more limestone for furnace flux than probably any spring since its existence.

Cement.

Strong Company Will Build in Kansas.

The Ash Grove Lime and Portland Cement Company, Kansas City, Mo., with a capital stock of $2,750,000, will erect a modern cement plant at Chanute, Kas. The company owns 320 acres of well-proven raw materials for the manufacture of a first-class Portland cement. There are three dependable gas wells on the property, which insures the cheapest fuel to be used in the principal item of expense, which is the calcining of the composition of raw materials. This concern is the outgrowth, or more properly, an expansion of the Ash Grove White Lime Association, which was started in 1881 at Ash Grove, Mo., and has gradually grown until its lime capacity last year amounted to more than 700,000 barrels. They have lime plants in five different quarry locations in western Missouri.

W. B. Hill of Kansas City, who has long been known as the great figure in the lime manufacturing business in western Missouri, remains at the head of the reorganized company, and thereby becomes a cement manufacturer.

On the board of directors are to be found the names of the following prominent Missouri capitalists, which is a guarantee of an able and intelligent conduct of the new company's affairs: Hans Dierks, president of the Dierks Lumber and Coal Company, Kansas City; L. L. Siebel, secretary of the Badger Lumber Company, Kansas City; C. J. Carter, president of the C. J. Carter Lumber Company; O. J. Hill, president of the Ozark Cooperage and Lumber Company, St. Louis, Mo.; J. T. Woodruff, president of the Springfield Trust Company, Springfield, Mo.; J. H. Barton, secretary of the Ash Grove White Lime Association, Ash Grove, Mo.; J. F. Pollock, treasurer of the Ash Grove White Lime Association, Kansas City, Mo.

Nearing Completion.

Work on the Kansas City Portland Cement Company's plant is rapidly nearing completion. The company expects to be manufacturing cement by June 15. The location of this plant is a decided advantage as they are within ten miles of Kansas City and have both river and railroad close at hand. Limestone and shale are both on the premises in unlimited quantities and three kinds of fuel within easy reach. A. Baumberger, formerly with the "Red Ring," has charge of the sales. He is well known to the trade in all the districts where the output of this mill is to be marketed.

Cement Shortage in Australia.

The Sydney correspondent of a London newspaper writes that there is an increasing shortage in the Australian cement imports which is occasioning considerable inconvenience, notwithstanding the fact that large quantities of good quality are produced in the Commonwealth. Every consignment is sold at full rates before being landed. This is affording a powerful stimulus to local production, which in New South Wales amounts to 70,000 tons per annum and in Victoria and South Australia to about 10,000 tons each. The Australian article is protected by an import duty of 18 cents per hundredweight, but this is insignificant just now, for prices have advanced $1.50 per ton, notwithstanding which manufacturers are rushed with orders.

Cement Imports by Barbados.

The imports of cement into the island of Barbados last year are stated by Consul A. J. Clare of Bridgetown to have been 5,071 barrels, against 7,188 in 1905. The United States, which supplied 300 barrels in 1905, furnished but one last year, while Great Britain sold 6,588 and 4,870 barrels, respectively. A London brand is most popular, selling at $3 to $3.25 per barrel of 400 pounds gross weight. The local government, when importing it, requires that cement barrels shall have four corrugated iron hoops, and the joints grooved and tongued. The duty is 30 per cent, with a surtax of 20 per cent, while the freight rate is 45 cents per barrel from New York to Barbados.

Among the Cement Interests.

The Alma Cement Company of New York City, of which C. H. Zehnder is president, is remodeling its plant at Wellston, O., increasing the output to 1,800 barrels daily. This plant, with the improvements above mentioned, will compare favorably with any now in operation. The pulverizing mills have been installed and are now running, but the full capacity of the plant will not be reached until the power equipment is complete. The improvements have been laid out and the work is being carried on under the supervision of the Fuller Engineering Company of Allentown, Pa. James T. Phelan, superintendent of the works, is in charge of the work and it is now being rushed to completion.

Mr. Churchill, representing the Edison Portland Cement Company in New York, at 1133 Broadway, reports very favorably regarding business conditions with his company. A large number of contracts are on hand, and the only complaint made is that at this time the drawing on these contracts is curtailed by unfavorable weather, which delays large railroad operations in addition to hindering construction of other kinds. Prices remain firm and Mr. Churchill expects an unprecedented demand for cement as soon as the weather allows its unrestricted use.

Albert Moyer, manager of the sales department of the Vulcanite Portland Cement Company, whose office is in the Flatiron building, New York, says that the demand for cement is larger than ever experienced before. So great is the call for cement, says Mr. Moyer, that, if weather conditions prove more favorable for building, his firm as well as other manufacturers of cement, will find themselves literally swamped with orders. The Vulcanite Company has issued many instructive booklets of interest to cement users in general which will be mailed on application. Among the number is an especially valuable one on "Cement Sidewalk Paving," with suggestions as to the method of construction, written by Mr. Moyer, who is a civil engineer of ability and experience.

The Lehigh Portland Cement Company, Allentown, Pa., reports that its plants at Allentown and Mitchell, Ind., are taxed to capacity to keep pace with the rush of business. The concern looks for a year of unprecedented demand for cement.

The New York office of the Pennsylvania Cement Company, 26 Cortlandt street, of which Mr. Bale is the resident representative, reports excellent business conditions. This company has some large contracts on hand, among which is the furnishing of cement for the building of a large dam on the Yadkin river at Whitney, S. C. The company furnished the cement used in the construction of the new plant of the Orford Copper Company at Bayonne, N. J., where nine reinforced concrete structures were erected.

The Penn Allen Portland Cement Company, Allentown, Pa., is enjoying a good demand at the present time and looks forward to a prosperous year.

According to the last government report the Kansas district produced 13,000,000 barrels of Portland cement, or a little more than one-fourth of the entire output of the country.

The Northampton Portland Cement Company announces the removal of its sales headquarters to Stockertown, Pa., the home office of the company.

Howard B. Green, sales manager of the Whitehall Portland Cement Company, Philadelphia, Pa., recently said: "The new uses of Portland cement will successfully take care of all the additional product of the new cement mills this year."

Edwin C. Eckel has resigned his connection with the United States Geological Survey and opened a laboratory at 208-209 Muncie Building, Washington, D. C., where he will make a business of examining and reporting on cement materials and allied products for manufacturers and investors interested in the manufacture of rock products.

Good Man Promoted.

L. W. Sidbald, who has been connected with the Omega Portland Cement Company of Jonesville, Mich., for the past seven years as superintendent, will take the position of manager formerly held by Mr. Wade, who retired from the active conduct of the business the last of the month, and will take up the lumber business in the Southwest. Mr. Sidbald is an active man, and we shall expect many good reports from Jonesville in the future.

Panama Canal Lettings.

The Panama Canal Commission has awarded contracts for explosives to the E. I. Dupont de Nemours Powder Company of New York; for cement to the Atlas Portland Cement Company of New York; and for a crushing outfit to Manning, Maxwell & Moore of New York. There will be another large letting shortly for the purchase of shop machinery and supplies, the specifications for which have not as yet been announced.

A Cement and Sand Concern.

The Union Sand and Material Company, St. Louis, Mo., has increased its capital stock from $1,050,000 to $3,000,000. The increase is brought about by the absorption of the St. Louis Portland Cement Company, with valuable real estate and equipment, located near St. Louis, and the Memphis Sand and Gravel Company, with plant and equipment, at Memphis, Tenn. The Union Sand and Material Company will continue operations as an extensive sand and gravel producer by reclaiming from the Mississippi river for the markets of St. Louis and Memphis, and will also operate the cement plant and handle the sales of its product direct in connection with their material supply business.

Made a Good Showing.

At the first annual stockholders' meeting of the Empire Portland Cement Company, held at the office of the plant at Warner, near Syracuse, N. Y., on May 7, the following officers were elected: Gen. Charles Miller, president; Geo. C. Miller, vice president; J. B. Moorehead, secretary and treasurer, all of Franklin, Pa. H. S. Hayden of Syracuse was reelected manager for the coming year.

Close to the Jamestown Exposition.

The next meeting of the Association of American Portland Cement Manufacturers will be held at the Hotel Chamberlain, Old Point Comfort, Va., June 10, 11 and 12. There will be no papers read.

CEMENT INCORPORATIONS.

The Cowham Syndicate has purchased a 264-acre tract of land near Dallas, Tex., and work will at once begin on the construction of a cement plant, which will be known as the Southwestern Portland Cement Company.

The Kaw Portland Cement Company, composed of Fort Scott and Kansas City capitalists, has been incorporated under the laws of West Virginia with a capitalization of $3,000,000. A large cement plant will be erected within the next three months. C. C. Nelson, president of the Citizens' National Bank of Fort Scott, Kas., is president; Grant Hornaday, treasurer; D. P. Thomas, vice president and general manager.

The Monarch Portland Cement Company, Chanute, Kas., has taken out a charter with a capitalization of $4,000,000, half of which is common stock, and half preferred. The subscription books are now open.

The Tulsa Portland Cement Company, Tulsa, I. T., has been incorporated with a capital stock of $2,500,000. Beeks Frick of Ft. Wayne, Ind., is president.

The Occidental Portland Cement Company, Jersey City, N. J., has been incorporated with capital stock of $2,000,000 by H. O. Coughland, L. H. Gunthey and J. R. Turner, all of Jersey City.

The Allentown Portland Cement Company, Allentown, Pa., has been incorporated with $2,000,000 capital stock. This company will at once erect a mill near Egypt, which will have an output of 4,000 barrels a day. The officers are: G. A. Schneebell of Nazareth, president; Morgan Davis, Jr., Scranton, vice president; Clarence A. Wolle, Bethlehem, treasurer; J. H. Bonman, Allentown, secretary.

The Humboldt Portland Cement Company of Kansas City, Mo., and Humboldt, Kas., has been incorporated with a capital of $2,000,000. C. H. Pattison is president of the company; W. G. Kelly, vice president and general manager; E. B. Schermerhorn, second vice president; C. C. Quinlin, secretary; W. McCray, assistant secretary, and W. W. Mills, treasurer. All the officers are residents of Kansas City, Mo.

The Seaboard Portland Cement Company, Catskill, N. Y., has been incorporated with a capital stock of $100,000 by John J. Donovan, 408 Manhattan avenue; Thomas H. Low, 326 W. 113th street; N. A. Stancliffe, 219 W. 104th street; Thomas E. Fitzgerald, Nassau street; M. J. Kelly, 140 Nassau street, all of New York.

Concrete.

Reinforced Concrete in Factory Construction.

The following very interesting paper was read before the American Cotton Manufacturers' Association by P. Austen Tomes of the Atlas Portland Cement Company of New York City at a recent meeting of that organization:

Mr. Chairman and Gentlemen of the American Cotton Manufacturers' Association: In response to the request of your secretary I have prepared a short paper on reinforced concrete in factory construction, a subject that should be carefully investigated by any manufacturer who contemplates building.

From the time the machine shop graduated from the village smithy and the loom was moved from the back room of the cottage to a common work shop, the urgent need of an indestructible economical fireproof building has been keenly felt. Many types of buildings have been advanced to meet some or all of these requirements, from the old masonry mill to the modern slow-burning mill construction or the steel frame hollow tile factory; but until a few years ago, when the wonderful qualities of concrete were fully demonstrated, no satisfactory solution of the problem had been found.

About forty years ago a French gardener, Joseph Monier, first conceived the idea of embedding metal in concrete in an endeavor to lessen the thickness of some flower pots he was making, and from this simple beginning, by slow stages and after much experimenting, the great system of reinforced concrete was evolved.

While it is true that reinforced concrete is less than half a century old, it must be remembered that concrete construction was used extensively during the constructive period of the Roman empire, and although their cement was of a quality much inferior to the high grade Portland cement of today, much of the work done then is in an excellent state of preservation, a silent witness to the indestructibility of this material.

For the information of those who have not studied this subject, let me say that ideal concrete (artificial stone) is made from a mixture of broken granite, trap rock or clean screened gravel, in size varying from a walnut to a hen's egg, clean coarse sand and first-class Portland cement in such proportion that the voids between the stones will be filled with sand and the voids between the grains of sand filled with Portland cement, with Portland cement slightly in excess of the quantity necessary to fill said voids, in order to furnish additional adhesive properties to thoroughly combine the sand with the broken stone. To this sufficient water is added to act upon the chemical qualities contained in the cement. The whole, after sufficient time has elapsed to give the cement time to set, forms a solid stone (monolith).

Reinforced concrete is ordinary concrete in which iron or steel rods or wire are embedded. Reinforcement is required when the concrete is liable to be pulled or bent, as in beams, floors, posts, walls or tanks, because, while concrete is as strong as stone masonry, neither of these materials has nearly so much strength in tension as in compression. Moreover, concrete alone, like any natural stone, is brittle, but by embedding in it steel rods or other reinforcement the cement adheres and the metal binds the particles together so that the reinforced concrete is better adapted to withstand jar and impact. Even railway bridges are built, not only in arch form, but in some cases like a steel girder bridge, with a flat reinforced concrete floor supported by horizontal beams of the same material. It is to this form of concrete construction that I wish to call your attention.

For the purpose of easy discussion, let us divide the advantages of this construction into five headings: Economy, Durability, Fire Protection, Sanitation and Adaptability. In the first place concrete requires only such material as is easily obtainable, the sand and gravel or broken stone being local products, while cement and such steel as may be required for reinforcement can be had on comparatively short notice.

As most of the work is done by unskilled labor under the direction of competent foremen the wage cost is at a minimum. If it is desired the work may be undertaken by the owners themselves, as in the case of the Textile Machine Works, at Reading, Pa., where the owners constructed a building 50x200 feet, four stories in height. This was, of course, designed by a competent engineering firm, the Concrete Steel Engineering Company of New York, who also acted as consulting engineers during the course of construction. Rapidity of erection may well be considered under the economical heading, for as there is no mill or shop work to be done on such a building, the costly delays generally encountered in structural steel work are eliminated and a building can be started immediately.

It is difficult to compute comparative costs of concrete construction, as the individual cost varies widely with local conditions, but the well-known engineer, Sanford E. Thompson, says, in discussing the subject: "It may be stated as a general proposition that reinforced concrete is almost invariably the lowest priced fireproof material suitable for factory construction, and with the high price of lumber, it is frequently even lower than brick and timber mill construction with the added advantage of durability and fire protection." Other authorities place the average cost between that of timber and steel construction.

From the standpoint of durability many instances might be cited, both on this continent and in Europe, as to the ineffectiveness of time upon concrete, but this is such a universally recognized fact as to need no discussion.

The effect of sudden shock, such as earthquake, upon concrete may best be illustrated by quoting from a letter written by the owner of a reinforced concrete house near Kingston, on the island of Jamaica, West Indies, to Leonard C. Watson, president of the Aberthaw Construction Company of Boston, Mass., constructing engineers for the work:

"Dear Mr. Watson:—I write to you to let you know that the house at 'Folly' and all the other concrete erections upon the place have passed through the late earthquake without showing the least crack or shake. From the accounts in the papers, which are all derived from sources desirous of minimizing the violence of the shock upon the north side of the island, you will get a very false idea of it. Perhaps the relation of the following fact will enable you to appreciate the damage of movement to which we were subjected: Owing to misjudgment of proper time of repairs, when we arrived here we found very little water in our reservoir, which was soon consumed. An unparalleled drought followed and we have not had a drop of fresh water since about the first of January. Consequently we have used our bathtubs all over the house as tanks for salt water to use in flushing the water closets. At the time of the earthquake all bathtubs put to such use were about half full of sea water. In every case a considerable part of the water was splashed over the sides or ends of the bathtubs upon the floor of the bath-rooms. The rumbling noise, which momentarily preceded the first and heaviest shock and which seemed like the passage of a train of cars over the roof, drove us out of doors and it seemed as though the house must be shaken to pieces; but we soon returned to it to ascertain what damage had been done and found only the bath-room flooded as I have stated.

"I give you this information because it is a great satisfaction to us to feel so much security in the strength and solidity of our house. Very truly yours,

"ALFRED MITCHELL."

San Francisco also produced some good illustrations along this line.

For a building designed to contain heavy or fast running machinery, concrete is especially adapted, the monolithic nature of the structure and the density and compactness of the material deadening and absorbing the vibrations in a way impossible in steel or wooden structures.

While speaking of the monolithic nature of these buildings it might be well to mention a warehouse at Tunis, North Africa, which was built of reinforced concrete, and which, owing to the yielding tendency of the ground under the foundation settled on one side to such an extent that the top of the building was sixteen feet out of plumb. The building was finally righted by excavating under the high side and gradually lowering until it was again in a normal position although some seventeen feet below the former level. No cracks or other damage was reported.

Another quality of concrete with which most of you are familiar, is the absence of danger from corrosion, rust and decay. Steel when embedded in concrete will not rust or deteriorate and the upkeep of this class of building is practically nothing. Concrete needs no painting.

A concrete building is fireproof, as has been proved by the great conflagrations of Baltimore and San Francisco, as well as by many isolated cases.

One of the latter, the Pacific Coast Borax factory, at Bayonne, N. J., has had probably the best chance to prove the assertion, as it was one of, if not the first, reinforced concrete factory built in this country, and as the fire occurred in 1902 the bad effects, if any, would have had time to show themselves. This fire started in the calcining department, and a feed pipe, used to convey the oil to the burner, broke, flooding the floor with burning oil and making a fire of terrific heat. In spite of this the damage to the building was only about $1,000.00, caused mostly by the falling of a heavy iron tank from the wooden roof, which burned to the floor below. The structural damage caused by the fall of this tank consisted of three broken beams and a broken floor slab. The company owning the building has since erected a number of concrete buildings and states that it would not consider any other kind of construction.

At Duluth last year a fire occurred in the grain "crib" or working elevator of the Peavy Elevator Company, of Minnesota. The fire completely destroyed the "crib" and contents, about one million bushels of grain, but the circular bins of concrete, six of which were within a short distance and completely surrounded by flames, were unharmed, and offered such resistance to the fire that even their contents were not injured. Some idea of the intense heat may be had by the statement of an eye witness, who says the glass in windows half a mile away was broken by the heat.

The impermeability of concrete is another factor that should be reckoned with. This prevents to a great extent the damage caused by water seeping through the floors and the consequent damage to the contents of the floors below.

The insurance on concrete buildings is very low and this taken in connection with the immense saving due to uninterrupted business when a fire occurs, makes this class of building particularly desirable.

The design of concrete factories, which permits the greatest percentage of light, together with the fact that such buildings can readily be washed down with a hose, the equality of temperature and the sound-proof qualities are all that need to be considered from a sanitary standpoint.

Concrete, being a monolithic mass composed of small units, is readily adaptable to any style of architecture, and the surface can be treated in numerous ways, pleasing to the eye. If necessary, floors can be constructed with long spans and arrangements can be made, whereby shafting, etc., may be readily shifted.

There have been failures in reinforced concrete as there have been failures with every other building material, but from all reports on these failures it is apparent that they were not due to any weakness of the material, but to the way it was handled.

There are numerous ways that concrete can be used to advantage besides the factory building proper. In dams, sluices, tanks, stand-pipes and chimneys, concrete will be found to possess its own peculiar advantages and new uses are being discovered every day to which this most adaptable of all building materials may be put.

High Class Practical Waterproofing.

A new waterproofing is being introduced in this country by Theodore Koch, 1025 Unity Building, Chicago. The product is known as "Bitumen Emulsion," and is prepared in Germany where it has been on the market for about eight years. It has the indorsement of German engineers, contractors and government officials.

In appearance Bitumen Emulsion is a thick black fluid and it smells like asphaltum. The importer claims that when mixed with cement its tensile strength is increased.

To apply Bitumen Emulsion, it is mixed with cement and sand in the following proportions: One quart Bitumen Emulsion and one sack of cement to three parts of sand. The mortar thus obtained, being plastic, may be applied in regular plaster form. The wall must be perfectly clean and free from loose particles of material. The first coat applied should be about one-eighth of an inch in thickness. After this has thoroughly dried a second coat is applied. The conditions may be such as to require a third coat; in that case a mixture of pure cement and Bitumen Emulsion is used.

In making a new wall waterproof Bitumen Emulsion is mixed with concrete and the concrete worked in the usual manner.

It is advisable to apply the waterproofing on the outside of a wall where it is below the surface, otherwise when it is applied as an inside plaster the water pressure is against it.

The inventor claims that frost will not affect it; acid will not affect it and it is absolutely impervious to water.

A German, expert in handling the material, is now in this country giving demonstrations in its application and use, and the exhibits made have attracted considerable attention. The work done in Chicago has been very satisfactory so far.

A ROCK PRODUCTS man investigated several structures and places where this material is being used. He also interviewed the men who had charge of the work and procured from them their opinion on its merit.

At the new manufacturing plant of the Illinois Vinegar Manufacturing Company at Forty-seventh street and Oakley avenue a large basin or vat has been put in. The floor of the building, being nearly on a level with the ground, gives the basin a depth of about six feet. It is about 60 feet long by 20 feet wide. The foreman in charge of the work said that up to within the time the waterproofing was first applied there was always water standing at a depth of six to eight inches. When viewed by the ROCK PRODUCTS man the walls were dry and there was no water in the bottom.

The next place visited was a tunnel being constructed by the Commonwealth Electric Company at its plant near Twenty-second and Halsted streets. The engineer in charge of the work said that he was waterproofing the walls of the tunnel on the inside. So far, the walls that were plastered were perfectly dry, though the tunnel was below the level of the river which was within a few hundred yards.

The Borland Building at the corner of LaSalle and Monroe streets has had trouble in the sub-basement ever since the building was put up a year ago. The foundations are of reinforced concrete two feet thick. The contracting firm in charge said they had trouble with the surface water running through, and at one place, thirty-eight feet below the street level, a point in the wall which was on the level with a catch basin, whenever the catch basin overflowed the water poured in. After the application, which was made three weeks before our representative's visit, it was found to be dry. The work here was all on the inside, so that the pressure of the water was against the plaster. The other patches that had been made were found to be in perfect condition. The contractors were well pleased with their success and spoke very highly of Bitumen Emulsion.

E. F. Parcault, of Sutherland, Iowa, has invented a collapsible arch for building cement culverts, and is arranging to manufacture them.

Both the concrete block factories at Fairmont, Minn., have all that they can do, and are shipping their goods to surrounding towns.

The Atlas Concrete Works has been formed at Hanska, Minn., with Gudman Anderson as president and Christ Moe as manager.

R. W. Freer, of Princeton, Minn., will install a concrete block machine and engage in their manufacture.

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Kosmos Portland Cement is the product of a model plant, using high grade raw materials and under the direction of a staff of experienced cement engineers.

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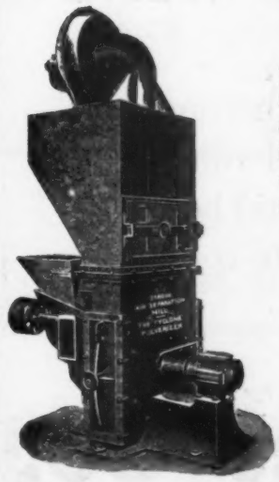

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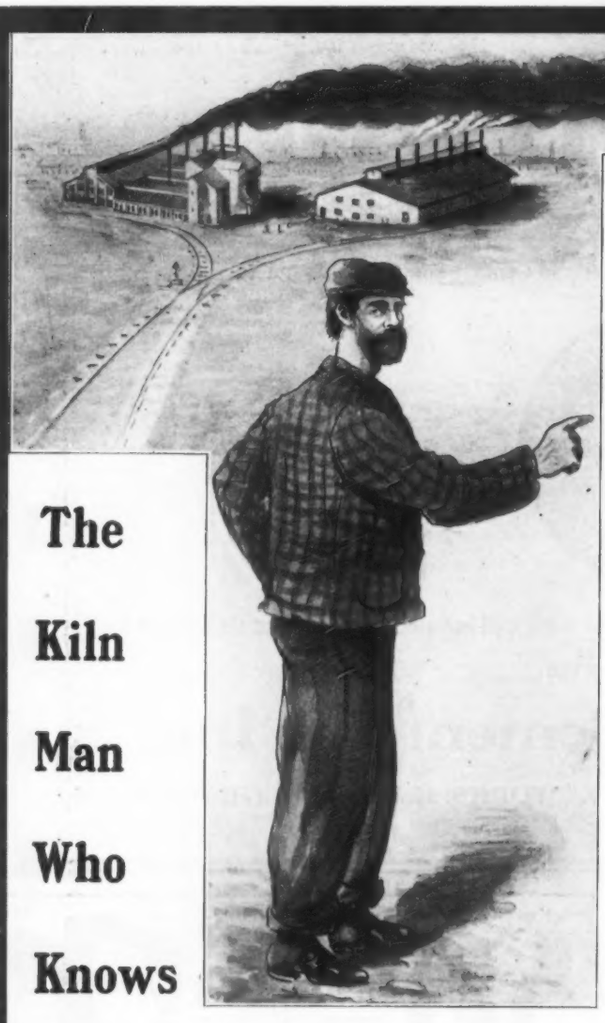

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Combustion Utilities Company

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60 Wall Street NEW YORK

Vol. II October, 1906 No. 11

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Circulation 10,000

Standard Requirements of Tensile Strength and Constancy of Volume

Published by
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Philadelphia
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Front and back covers of No. 11, Vol. II

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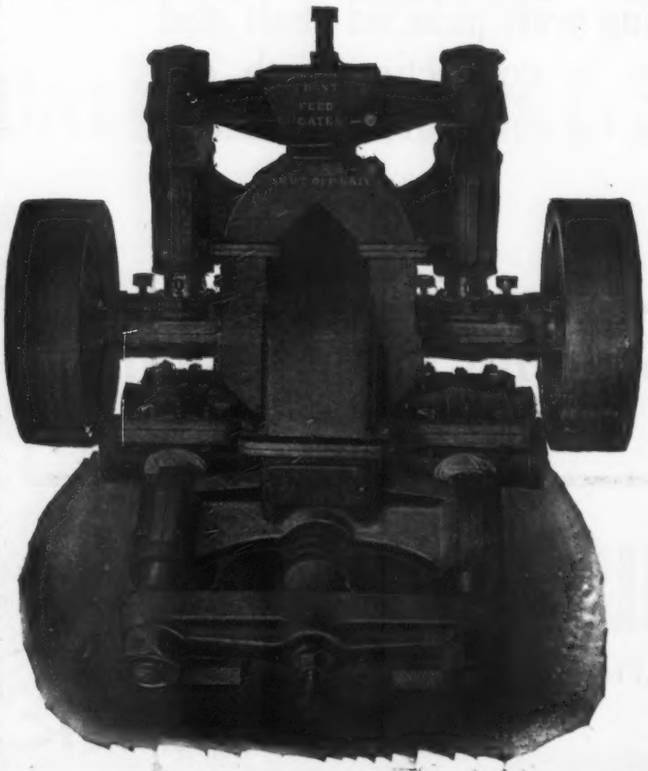

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Concrete

CONCRETE IN MEMPHIS

Rapid Development in All Branches of Construction.

MEMPHIS, TENN., April 30.—While this rapidly growing commercial center of Dixie is at the seat of the hardwood supply of the country, and in close access to the pine forests, the feeling is very pronounced in architectural and construction circles that the next few years will show a very rapid development in concrete construction. The residential suburbs out from Memphis on the steam and electric lines and in the towns further removed from here but who take their structural ideas in style and suggestion from the Bluff City have already taken up this class of work in a small way, and within the last two years a very fair inauguration of concrete block enterprises and houses built of blocks have had their contemporaneous beginning in Memphis.

Now there are half a dozen different concerns that by one process or another are engaged in manufacturing concrete building blocks, porch columns, posts, vaults, ornamental structural parts and specialties. Several very creditable structures have been erected of this character of stone.

Where the Work Appears.

Very pretty examples of this concrete stone work may be found in all parts of Memphis now, but to locate the same when you are planning your house, you must remember that in Memphis the industry is in its "infancy" and had perhaps better ride on the cars. On Vance street, one of the older and more prominent residence streets, a flat and apartment house is shown. Out on the East End car line, the most rapidly growing residence district, in Madison Heights and Lennox several concrete block residences have been erected and in Lennox a handsome church of the same material stands on a prominent corner.

In Court Square, the leading park of the down town district, a small apartment for the superintendent's use affords one example of the earliest concrete work in Memphis.

These churches, residences and flats are the work of builders in the last two years.

In the Evergreen subdivision there are a few homes of concrete blocks. In the North Memphis industrial district, a neat office has been erected of the same by the Arthur Hardwood Flooring Co. This, while a small structure, is complete and easily the neatest office among the half hundred offices of large firms—most of them firms who have wooden material to sell. Adjoining the latter firm's grounds is another office of like material just put up by the Odum-Taylor Boiler Company.

CONCRETE BLOCK RESIDENCE, MEMPHIS, TENN.

The new power plant of the great woodworking factories of the Anderson-Tully Company was built of concrete blocks last fall. The fireproof and permanent qualities of this material as well as the practical economy caused these immense producers of wooden building materials to employ the concrete blocks for the construction of the building which is always the danger center of a woodworking establishment as the best protection against the fire danger.

POWER PLANT OF ANDERSON-TULLY CO.

Within the last few weeks a large job in reinforced concrete work for an industrial enterprise has been awarded the Selden-Breck Construction Company, which maintains an office in this and many other cities. The job in question is for the American Bag Company to erect a large factory in South Memphis, "Station G," for the manufacture of cotton bags. The building will be three stories high, stand 180 by 400 feet and cost around $100,000. The same contracting firm has the contract for a large number of concrete houses for the operatives' houses in the same portion of Greater Memphis.

The Builders.

Nearly all of the architectural firms in Memphis and many of the contractors and builders have done work here in artificial stone. Reinforced concrete buildings will be built for a number of industrial enterprises during 1907. A large hardware concern is planning a structure to be built mainly of concrete somewhere near the old Union depot and Calhoun street.

The firms here who manufacture building blocks are enterprising enough and strong enough to do the building work themselves if they want to do so. Indeed one large firm here is considering organizing a corporation, like the one organized recently in Houston, Texas—to build an elegant residence from the uncut tree to the finished drawing room of lumber, except that the firm in Memphis that has this plan in embryo will use concrete blocks, manufacture them and see that they are put into the home

RESIDENCE OF C. A. MOORE, MEMPHIS, TENN., BUILT OF CONCRETE BLOCK.

COBBS FLATS, MEMPHIS, TENN., BUILT OF CONCRETE BLOCK.

exactly right. The very particular character and intent of the work make this plausible. This Memphis man, talking to ROCK PRODUCTS' representative, said, "If plausible, why not profitable?"

Among the manufacturing firms in Memphis who have been prominent with the concrete building block manufacturing industry in its first period of existence is the Memphis Hydraulic Stone Company, of which Steve Wright, so long known in the builders' supply trade here, is president and general manager. Some picture views of work done with their product accompany this article. This firm has the exclusive rights here for the patents of the celebrated Fisher Hydraulic Stone and Machinery Company. By a system of hydraulic pressure, it is claimed the absorption of rain water is positively eliminated. The length of the blocks and the general attractive appearance of the stone are other features. The stone is generally made in 32 inch lengths. The color is superb, practically a lively cream white. With age the block retains the same appearance. The reverse side arrangement and price features are strong points with this stone. The fact that water will not travel the joints is a feature on which the company dotes. Mr. Wright states that with the Fisher system, the builders can put up from 1,500 to 2,000 square feet of wall face per day, and 12 inches thick, a double wall, with an average of six men. This is putting out on an average "a cottage a day." On April 1, the buildings of the Memphis Hydraulic Stone Company were almost totally destroyed by fire, but it was found that the machinery, most of which was not enclosed in the heavy building, was only comparatively slightly damaged. The damage has all been repaired by replacing the sheds and buildings and the operation of the factory resumed. They have a nice supply of orders to keep them busy the whole season through. Their reputation, so well established, is making them new business all the time.

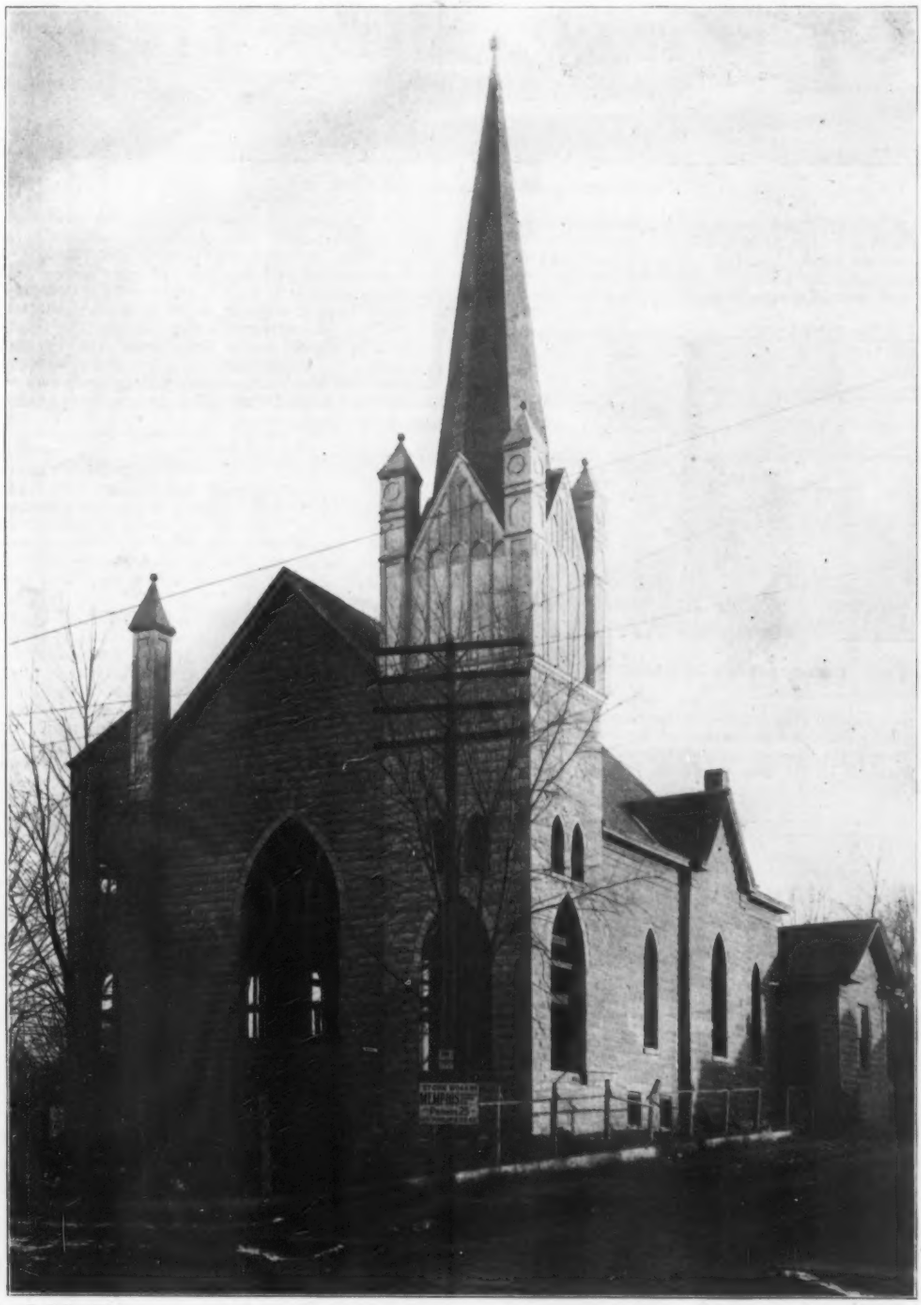
Cheatham & Ward Stone and Manufacturing Company, at the corner of the Louisville & Nashville railroad and Manassas street, have long been identified with the manufacture of concrete stone here and have quite a patronage.

The Sutton Company, at Cooper and Central avenue, make hydraulic stone, and located as they are in the most rapidly growing residence district, they, with their product that has proven a success, do a great deal of work.

The Southern Cement and Stone Company, corner Cook and Poplar streets, while not as old in the work as some of the other firms in Memphis, have done considerable concrete and stone work. Mr. Hoffman of the firm is regarded as quite an authority in local building circles on this work.

The Memphis Granolithic Stone Company, conducted by M. McDaniels on Raynor and McLemore avenues, is one of the leading firms in Memphis now manufacturing granolithic stone. The plant of this factory is commodious and well arranged. Some handsome homes and churches in Memphis pay tribute to the good work of this concern. The business was established four years ago and is the second oldest concern of the kind in the city.

All people in the building trade compliment the work of this factory very highly. ROCK PRODUCTS' representative was directed by many of the down town contractors to the plant of the Memphis Granolithic Stone Company, to hear what was doing in the industry in Memphis. Mr. McDaniels follows up the conventions closely, and goes hundreds of miles if necessary to get the newest developments. The factory turns out from 900 to 1,000 blocks a day. The factory also makes blocks for vault work and certain classes of porch columns, posts and ornamental work in cement.



BAPTIST CHURCH, MEMPHIS, TENN., BUILT OF CONCRETE BLOCK.

Shipments to Towns.

The concrete block factories in Memphis are building up a nice shipping trade to other towns. In Western Tennessee, Arkansas and Mississippi many residences, storehouses, banks and churches have utilized concrete building blocks with satisfaction, and unquestionably for the South, this is one of the fast coming important industries.

In Memphis and the surrounding territory for a hundred miles out that has come to be popularly known as the "Memphis district," quite a good deal of concrete work has been done by the municipal authorities, by railroad and private interests in the way of culverts, sewerage systems, municipal buildings and other interests. With the concrete business growing in the favor of municipal engineers and proving of such utility and direct profit and permanence with the public works, certainly it is growing in favor with the laymen of the South.

Concrete Buildings for Large Plant.

One of the largest concrete contracts in the construction line recently closed in the vicinity of New York is in the hands of the Curtin-Ruggles Company, 39 Cortland Street, New York, which is practically rebuilding the plant of the Orford Copper Company at Bayonne, N. J. The entire contract, which calls for the erection of a total of thirteen buildings, nine of which are of reinforced concrete construction, will involve the expenditure of over half a million dollars, and is an undertaking of considerable interest to those watching the progress of concrete construction as applied particularly to factories and large plants, where durability and the quality of being fireproof are of no less consideration than in tall office buildings or public edifices.

Of the nine concrete buildings of the Orford Copper Company's new plant, three are especially interesting on account of their size, form of construction and convenient arrangement. These are the nickel calcining building, the electrolytic building and the mammoth powerhouse.

The nickel calcining building measures 323x210 feet and a notable feature in its construction is two rows of 54-foot concrete spans running the entire length of 323 feet. Besides these there is one row of 40-foot spans, one row of 21-foot, one of 19 and some smaller. Two rows of coal hoppers running the entire length of this building are entirely of concrete and deserve special attention because they act in the capacity of columns supporting the girders of the structure. A railroad track runs between the two rows of coal bins on one side, then with an outdoor curve extends between two rows of like coal pockets on the other side of the interior.

The electrolytic building is a two-story structure 75x270x40 feet, of which one end of the second story contains offices, engineering department and dining rooms. The center of the building up stairs is especially designed for a storeroom and has a floor capable of sustaining 400 pounds per square foot. The other end of the top floor is used for the chemical laboratories, while the entire ground floor is occupied by the testing laboratories and the electrolytic process for the final refining of nickel. An overhead crane running the full length of this floor is supported by concrete backs. In the lower floor some concrete columns, used to support the floor of the storage rooms above, can be seen. These give the strength required to support the floor above which has a capacity of 400 pounds to the square foot and are also interesting on account of their length.

The power house is a structure of reinforced concrete and measures 50x150x35 feet. Concrete coal pockets which measure 26 feet in depth extend the entire length of this building. Other features in the construction are the solid foundations for heavy machinery. These, all of which are composed of concrete, extend about ten feet above the ground plan and the passage ways, oil rooms, etc., are built along with them. An overhead crane of fifteen tons capacity runs the full length of this structure and the runway is supported on concrete brackets from the walls.

At the present writing this large contract is practically completed.

Pennsylvania Portland cement was used exclusively in the construction of the new plant.

Underpinning Gave Way Completely.

A great disaster was the collapse on April 27 of the huge steel and concrete pier which was being constructed at Locust Point, Baltimore, Md., for the Baltimore & Ohio Railroad Company. The McLean Construction Company had the work in charge, and the pier was to cost $750,000; the property loss is estimated at $350,000. The pier will be rebuilt.

Officers of the McLean Construction Company, the Baltimore Bridge Company and the Maryland Dredging Company, who were on the scene at the time of the catastrophe, cannot ascribe plausible and satisfactory reasons for the failure of the great structure. That it was in danger was known a week before, but it was not expected to actually collapse. Attempts to strengthen it were being made when the crash came, and 140 men were sent out on it and in scows that day, many of whom were at work dumping in sand to strengthen the wooden piling, and putting in extra piles. A few moments before the accident the concrete cracked away from the shore line, and the whole structure moved perhaps an inch toward the harbor; then with a crash that could be heard for a mile, it settled until almost the entire length of the superstructure was partly submerged, and so great was the straining and wrenching that immense iron girders were bent and twisted like wires. The pier was a long structure of concrete and steel, with a foundation composed of heavy wooden piles driven into the bottom of the harbor, close together; upon the piles was a platform of concrete through which ran reinforcing bars of steel. Above the concrete floor rose a two-story pier warehouse of corrugated iron over steel beams.

Various reasons are ascribed for the failure, but the exact cause cannot be established until competent engineers have made a complete examination of the bottom of the harbor, the piles, the weight of the superstructure, and the many other details which might play an important part in such an affair. Officers of the B. & O. say that a week previous the concrete base began to show small cracks, and at least 6,000 cubic yards of sand were deposited around the piles to keep them solid. They say that the washing away of mud and an uncontrollable condition of the harbor were responsible for the piles getting out of plumb, since each pile was calculated to support twenty tons of weight, and was only taxed with nine. Officers of the construction company, however, state it as their opinion that the immense weight of sand between the foundation flooring and the flooring of the pier, with the weight of the concrete walls and columns, was too great for the foundation. An earthquake has been suggested as the possible cause, but seismographs in the vicinity indicated no such disturbance.

H. J. Livingston of Baltimore, who recently invented an annealed cement, says that many recent collapses and accidents to concrete structures have been due to the fact that cement is absolutely noncohesive, and that when it is applied at intervals of several hours or a day it does not form a durable structure, but rather a series of parts each of which hardens singly. He thinks it possible that the method of applying cement may have had something to do with the defects in the pier.

In tracing the sources of many of the reinforced concrete failures, it has often been noted that the removal of the centering before the material had really become set, or the use of defective centering had been productive of bad results. It is a mistake for contractors to economize on material or on labor in the erection of the false work.

It is a foregone conclusion that neither the Baltimore & Ohio Railroad nor the McLean Construction Company built the pier for the purpose of seeing its picturesque collapse, and doubtless it will be found that local conditions existed which were not successfully combated because unknown to the engineers. The action of tide water often carries with it immense quantities of sand that accumulates around any immovable obstruction in such a way as to load almost any foundation to destruction. It is said by the practical men engaged on the job that no better work was ever put up, and it is clearly a case of the underpinning giving way completely without any apparent resistance above the surface of the water.

On Exhibition at Jamestown.

On this page is given a photographic reproduction of the fine residence recently completed for W. W. Johnson, Eddystone, Delaware county, Pa. It is built of cement blocks made on the Wingate Hollow Block machines, using a one to four mixture. The machine that made these blocks will be exhibited at the booth of the United Cement Machinery Company in Machinery Hall at Jamestown exposition.

Prominent Architect's Opinion.

"What do you think of concrete as a building material for a home dwelling?" was asked Mr. Anderson of the firm of Anderson & Veach, contractors and architects, at Evansville, Ind.

"It is all right," he answered.

Continuing, Mr. Anderson explained that the great majority of the people of the country are yet uneducated as to the many uses to which concrete can splendidly be put. He said that one reason why more concrete buildings are not built is that men who are not thoroughly acquainted with the business have made fizzles of putting up a few houses.

"It requires," said Mr. Anderson, "in concrete building, a man who knows his job. Skill is required in this line of construction and the same as in any other. In the last few years the companies and firms which have been doing concrete work have used skill and brains in their labors and secured admirable results. Concrete is destined to be used more and more as people get better acquainted with its merits."

Cement Workers' Convention.

San Francisco, Cal.—The District Council of Cement Workers held an important meeting May 6, and, after effecting a permanent organization, decided to hold the next convention in Santa Rosa, July 7, 1907. The council consists of thirty-five delegates, representing nine local unions located within a radius of fifty miles from San Francisco, and with an aggregate membership of over 3,000. Every delegate was in attendance. The following officers were elected: President, T. E. Keogh; first vice president, James Watson of San Jose; second vice president, E. McDermott of San Rafael; recording and corresponding secretary, W. A. Best; secretary-treasurer, I. L. Samsell of Oakland; trustees—J. Murphy, L. Flaherty, Peter Bennett of Oakland; executive board—O. A. Tveitmoe, L. B. Higgins, Julius Carlson, D. Haley, William Canton.

Stock of Concrete Blocks.

Manufacturers of concrete building blocks who have the foresight to accumulate a stock of those shapes and sizes which are most in demand often find that "specials," which have to be made direct for an order, seldom match the rest of the goods taken from stock, and which have been kept for some time.

Consequently many makers of such blocks hesitate about keeping a really practicable stock, as they are afraid that they will not be able to match them with others.

A manufacturer who recently found himself in this difficulty was unable to supply any solution to the problem, but on further inquiry it was found that he had used materials from a slightly different source, and therefore produced articles of a different color.

Makers of artificial stone should, therefore, exercise great care in the purchasing of their raw materials, or they may have serious difficulties with the architects when large orders are taken in hand.

New Cement Concern Incorporated.

Jersey City, N. J., May 18.—The Cement Engineering and Construction Company has filed articles of incorporation at the county clerk's office here. The concern, which is capitalized at $100,000, proposes to construct, install and operate plants for the manufacture of Portland cement. The incorporators are D. A. Garwood of Hackensack, N. J., John F. Navin of New York City and J. M. Shellabarger of Plainfield, N. J.

Landing Big Contracts.

Hutchinson, Kas., May 15.—J. T. Summers, the big, fat, jolly representative of Perfection Block Machine Company at Minneapolis, Minn., writes us from the field as follows: "I am getting along nicely without you and have installed a plant at Garden City. I have just closed a deal for another plant at San Francisco, Cal., and one that goes to Nashville, Tenn. These are all complete plants furnished with equipment from the Perfection Block Machine Company. The outlook for our machines was never better than at the present time. It is possible that in the near future we will move our factory to Columbus, O., in order to get all our machinery together, as we have an American mixer and use other machines made there."

Likes Concre locks.

Maddock, N. D., April 21.—The Superintendent of the Reform School has let a contract for the erection of a 40x80 foot addition to the school building to be used as a manual training department. The addition will be three stories high and will be constructed of cement mortar blocks. It will be located on the site of the building. A large power house will also be erected of the same material.

RESIDENCE OF W. W. JOHNSON, EDDYSTONE, PA., MADE OF WINGET HOLLOW BRICKS.

The Great Contest of Designs.

The Association of American Portland Cement Manufacturers has struck the popular chord with its prize competition for designs for suburban dwellings in concrete. Almost three hundred competitors have entered and the secretary of the association has a busy time issuing programs to new prospective candidates and taking care of the matter continually coming.

R. W. Lesley, vice president of the association, who has accomplished so many progressive measures for the cement industry in America has personal charge of the contest on behalf of the association. As the time for the awards approaches the interest naturally increases as the invitation is issued in the broadest terms. The prizes to be awarded amount to more than $1,000.

Jim Smith, the poet of *Cementology* bursts into song as follows:

Artistic Homes.

The chaps that handle fine cement
Has told the world of their intent
To give some prizes fer designs
Of houses on attractive lines.
Beautiful houses made from blocks
Of Portland cement ez hard ez rocks;
Houses to last thru wind and weather,
Both beautiful and strong together.

Few pretty homes, I calkalate,
Is made frum cement up to this date.
The people they has got to lern
That a cement house that will not burn,
Nor wear away, nor tumble down
When a erthquake strikes the tarnal town—
They've got to lern that a house that'll stand
Longer than enny in the land,
Can also be made a charmin' place
Chock full of beauty and of grace.

Why, bricks and slates and stone and wood
Ain't enny of 'em to the good
Compared with what cement can do
When arkkyteks compels it to!
When people hears of them designs
There won't be cement enuff in the mines
To supply the wonderful demand
They'll make all up and down the land
Fer concrete blocks and monolith.
That's gospel trooth! Yer frend, Jim Smith.

The New Montgomery Ward Building.

The construction of the nine-story reinforced concrete building for the accommodation of the mammoth establishment of Montgomery Ward & Co., in Chicago, is attracting no little attention. It is to be 1,000 feet long and 280 feet wide. The false work for the first floor is now almost complete, and the concrete will be poured this week, or at least that portion of the work will be well started. It will be divided into fireproofed sections, and will have an innovation in the pronounced crown, like the deck of a ship, given the floor of each room. These floors will all slope toward the sides, so that in case of a fire the deluge from the water sprinklers will be drained off in scuppers. This suggestion has struck the fire underwriters pleasantly and probably will pay for itself in lowered rates.

On the river side of the building, for it is located on the north branch of the Chicago river, just beside the Chicago avenue bridge, there will be a concrete dock, where lake steamers can tie up as well as the lighters which the company, following the example of other wholesale houses, proposes to build. Four railroad tracks will run under the building with a total capacity of sixty cars. The building itself will use the activities of about 6,000 employes. The architects—Schmidt, Garnder, Gardner & Martin—figure out about fifty acres of clear floor space.

Special machinery, housed in a plant that is itself three stories high, will pour the concrete into the molds for story after story.

The new structure will not be ready for occupancy until July, 1908. It enjoys the reputation of being the largest building in the world.

Fireproof Cotton Warehouse.

A. Goldman, Victoria, Tex., one of the most prominent and wealthy cotton ginners in that locality, is erecting a large cotton warehouse of concrete blocks. The block walls are eighteen feet high and the entire floor is of concrete. A push car will be used to convey the cotton gins from the gin to the warehouse. This is the first fireproof cotton warehouse in southern Texas. Mr. Goldman claims that it costs very little more than the usual insecure and fire-trap proposition that has always been considered the proper thing for a cotton gin warehouse.

Voting Booths of Concrete Blocks.

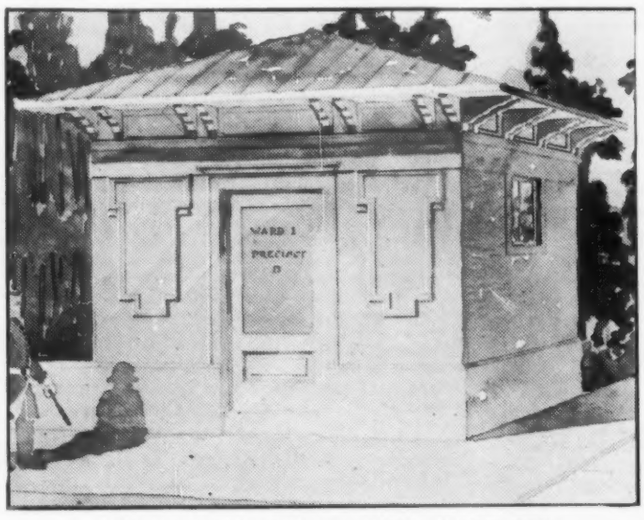
The cut shown on this page was made from the sample submitted to the municipal authorities of Cleveland, Ohio, for a voting booth. There are 246 voting precincts in the city of Cleveland and each of them will eventually have a booth of cement blocks. The contract for furnishing the blocks and erecting the voting booths represents many thousands of dollars. They will be constructed after the model presented in the picture.

Reinforced Concrete Boat.

There is a unique relic at Monmouth, Ill., which is said to be one of the first products of reinforced concrete ever built in this country. It is a boat which was built in 1849 of cement mortar embedding a wire netting in the mortar. The boat, which is still in existence, is said to be in good condition and water tight.

No More Wood for Him.

Geo. D. Penniman of Baltimore, Md., whose home in the suburb of Mt. Washington was destroyed by fire a few days ago, says that he intends to rebuild on the same site as soon as he can decide on the character of the house to construct. Referring to the fire he says: "I had no idea that a frame house would burn so quickly. If we had awakened five minutes later we would have had to jump out of the window and would have had difficulty in reaching the children. While I have not made any definite plans for the new house, I have been making some inquiry about hollow blocks and concrete construction. I may put either a slate or tile roof upon the new house. No more wooden houses for me."



VOTING BOOTH OF CONCRETE BLOCKS FOR THE CITY OF CLEVELAND.

First Concrete Residence in Denver.

Architect William E. Fisher is erecting for L. A. Hayden, of Denver, Col., a handsome concrete residence which will cost about $16,000. It will be on the Spanish mission style with natural color buff cement walls and covered with red clay tiles to give the old-time Spanish effect. The house is located in the center of twelve city lots, giving ample scope for landscape gardening. A two-story garage in harmony with the dwelling will be another feature of this fine home. It will be the first constructed entirely of cement material in the city of Denver.

Two Schoolhouse Jobs.

Architect F. S. Barnum of Cleveland, Ohio, has been making tests of concrete blocks in the construction of school buildings. Last year this material was used in the erection of the Marion and Waterson schools for foundations and partition walls and has been found very satisfactory. This year additions to two more schools will be constructed with the same material. The contract for this material has been let to the Cuyahoga Concrete Stone Company.

The Fuller Construction Company of Birmingham, Ala., has received part of their cement block-making machinery. Two of the machines, a large cement mixer and 4,000 different molds will give a capacity of 600 blocks daily, an output equivalent to 1,500 bricks.

Important Technical Society Meetings.

The tenth annual meeting of the American Society for Testing Materials will be held at the Hotel Chalfonte, Atlantic City, N. J., on Thursday, Friday and Saturday, June 20, 21 and 22, 1907.

This society has a long list of achievements to its credit in the way of standardizing building materials of every description as well as structural systems and methods. There is still before it a great deal more in hand and yet to be undertaken that the manufacturers of materials as well as the users or consumers are waiting for it to complete and reduce to practical workable standards. The society wants the support of all interested manufacturers, engineers and others. Edgar Marburg, Secretary University of Pennsylvania, Philadelphia, will be glad to furnish further information.

The Largest Concrete Bridge In the World.

The Walnut Lane bridge over the Wissahickon, connecting Roxborough and Germantown, suburbs of Philadelphia, is now under construction. The abutments, foundations and approaches of the bridge have been completed, and the false work for the cement arch placed in position. The bridge proper is plain concrete, although reinforced concrete will be used in certain subsidiary parts of the structure. There is one central arch, having a span of 233 feet. There are four approach arches of 55 feet each. The bridge, which is 60 feet wide and 520 feet long, is carried over the creek at an elevation of 120 feet. It will cost $256,000, and will be finished within a year.

As the largest concrete bridge ever constructed the Walnut Lane bridge becomes an object of interest to engineers and bridge builders. Its central span is exceeded in length by but two masonry bridges in the world, that at Planen, Saxony, the span of which measures 295 feet, and that of Petreuse, in Luxembourg, measuring 275 feet. After the Walnut Lane bridge comes the Cabin John bridge, near Washington, with a span of nearly 220 feet.

George S. Webster, Chief Engineer of the Bureau of Surveys of the city of Philadelphia, under whose direction this bridge is being constructed, said in a recent interview:

"Crossing, as it does, one of the most beautiful ravines in Fairmount Park, the bridge will be peculiarly adapted to the location. An iron bridge would have been most inappropriate, while the graceful lines of the concrete bridge will in no way mar the syvan beauty of the glen."

Riley & Riddle, Philadelphia, are the contractors, and for months they have been engaged with a veritable army of men putting up the false work for the great central arch. On the morning of April 27 the contractors began pouring in the concrete, which will consume many thousand barrels of Portland cement and other materials.

The Faragher Engineering Company has completed the reinforced concrete water storage reservoir for the city of Asheville, N. C. It is located on the side of a mountain and a water supply for the reservoir will be taken from the city's stand-pipe. The reservoir is designed to hold 5,000,000 gallons of water and is for storage purposes to use in case of emergency. This costs approximately $50,000 and has been completed in a very satisfactory manner in every respect.

A new concrete concern has been incorporated at Mont Vale, N. J., to be known as the Mont Vale Concrete Block and Construction Company, for the purpose of manufacturing brick, stone, cement, etc. The capital stock is $10,000. The incorporators are Frederick J. Pottinger, New York city; Francis Pottinger, Mont Vale, N. J., and William C. Owen, Brooklyn, N. Y.

Anchorage for Brooklyn Bridge No. 3

Showing How the Modern Contractor on Large Engineering Works Equips a Special Establishment, its Elaborate Preliminaries and Expensive Outfit—An Industrial Railway, Double Track, 2,000 Feet Long—Greatest Volume of Masonry Ever Specified for One Undertaking.

It is a matter of considerable interest to those in the cement and concrete industries, to note that of the entire cost of the new steel suspension bridge to be known as the Brooklyn Bridge Number Three, or the Manhattan bridge, nearly half is to be expended for masonry. Still more striking is the fact, gathered from an analysis of the estimated costs, that over 75 per cent of the masonry is concrete. It hardly seems possible that such is the case, but this only goes to show the stride which the concrete industry is making in the engineering field.

The following extract from the specifications gotten up by the Department of Bridges, New York City, is the authority for the above statement. Of the $19,651,000 which this bridge is to cost, $6,281,000 is allowed for the cost of real estate necessary for the abutments, approaches, etc. This leaves $13,370,000 which is distributed as follows:

River spans, steel superstructures complete	$ 6,500,000
Masonry, piers and foundations	3,500,000
Approaches	2,500,000
Engineering contingencies	870,000
	$13,370,000

The entire volume of masonry in the anchorage is approximately 114,000 cubic yards. Of this total, 42,000 yards are of ordinary concrete and 57,000 yards are of cyclopean masonry, a term applied to concrete containing large rectangular blocks of stone over half a cubic yard in volume. It is to be noted that the figures enumerated are in regard to the masonry in the anchorage alone. However, it is further to be borne in mind that the towers of the bridge are to be of steel, and that the tower foundations are not only small as regards their height, but are only one-sixth of the area of the anchorage foundation. Thus the conclusion arrived at in the opening paragraph is justifiable, particularly as the concrete in the anchorage only amounts to 88 per cent of the volume.

The Pyramids of Egypt Versus the Manhattan Anchorage.

Never before in the history of civil engineering (with the exception of the pyramids in Egypt) has a volume as great as 114,000 cubic yards of masonry been placed within an area but 220x218 feet. In addition, as shown by the Bridge Department drawing, this bulk of masonry is pierced by an archway to allow the traffic at Cherry street to pass through, this archway being 46 feet wide and approximately 46 feet in height. The Croton dam, part of New York City's water system, has of course a greater volume, but is distributed over an area many times greater than this. The Washington monument, while a tall and narrow shaft, still fails to exceed in volume the anchorage described.

The anchorage necessitated the tearing down of a portion of a seven-story brick building. This portion was shored up first from the inside with timbers at every story, these timbers being placed just without the borders of the portion to be wrecked. The condemned portion was then torn down and piles were driven beyond the proper site of the anchorage. On these a new wall was constructed which held up the lower ends of the wall beams of the old building. After this was done excavation could be carried on without danger of the wet subsoil, as is found in this part of Manhattan island.

Sheet piling 12 inches thick and from 20 to 30 inches wide were driven by the J. & F. Kelly Company, who were subcontractors for the foundation. These were put down by a Vulcan steam hammer and the piles, 4,430 in number, by four drop machines having 3,500 pound hammers in 45 feet leads, and one 5-ton and one 4-ton Vulcan steam hammer. In only a few cases was the water jet used, and the Lawrence centrifugal pump was sufficient for keeping the excavation dry. The piles were on an average of 25 to 30 feet long, 14 inches at the banded head and 9 inches at the point. The excavation was carried on by means of a force of 200 men with picks and shovels, the material being hoisted by five 1½-yard Hayward buckets of the orange peel and the clam shell types. Thus the excavation was carried to a level of —18 from M. H. W. or about 28 feet below street level. The piles were driven to a refusal of a quarter of an inch, and the work was so arranged that 16 of these piles were driven in 10 hours by each machine each day.

The Contractor's Plant.

The contractor for the anchorage was of the opinion that the overhead cable would not be the most efficient means of transporting material. Instead, a combination of the industrial railway and the belt conveyor, self-contained in the same elevated structure, was employed. All material was brought to the slip in the East river by barge and hoisted by grab hook or by orange peel grab buckets up to the level of the top of the trestle. The highest point of the viaduct is about 35 feet above the street level. On the top was run the industrial railway, and about 12 feet below was suspended the conveying belt, three-eighths inch thick, 24 inches wide, practically 1,700 feet long, of the type known as the Robins belt. This latter was capable alone of transporting 1,800 cubic yards of material in 10 hours, and was propelled by an Olney & Warrin engine of about 30 horsepower. Under the belt were run the steam pipes to the hoisting engines at the river front. Also contained within the elevated structure was the boiler room and the doublet set of bins for the storage of coal, sand, one-quarter inch trap-rock and crushed stone. The bottom of these bins contained steam pipes, which in cold weather prevented the freezing of material. There were two hoisting engines at the water front, one for lifting stone and the scale boxes filled with bags of cement, up to the cars of the industrial railway. The other, by means of the Hayward grab bucket, hoisted the coal, sand, trap-rock or crushed stone, discharging into the hopper, which fed the material on to the belt conveyor. This material was dumped by an automatic tripper into its proper bin near the mixer.

These bins are arranged in duplicate, one set for sand, crushed stone and trap-rock, being located to the east of the mixer, and a similar set being located to the west of the mixer. The bottoms of these bins contain doors, especially constructed by the Stuebner Iron Works, which are about 6 feet above the two double tracks which lead up to the charging pit. One track passes directly under the two sand bins and the other track under the two stone bins. The cement is stored in a nearby building.

The skip hoist which supplies the material to the mixer has two charging cars, so that while one is discharging into the mixer the other bucket is down in the pit receiving its material from the measuring car, which travels back and forth from the bins to the pit. The advantage in the double set of bins and measuring cars is to have continuous operation of the concrete mixer. This is accomplished by having one set of measuring cars being filled while the other set is charging the skip bucket, and this is done simultaneously with the discharge of the other skip bucket into the mixer. The sand measuring cars are of steel, hold 30 cubic feet, and discharge through the chute in the side. The stone measuring cars have a capacity of 60 cubic feet, and dump by having one side swing out on a horizontal axis near the top of the car. The charging cars, which operate on the skip, are of 80 cubic feet capacity and very similar in construction to those used in blast furnace hoists. These cars as well as the measuring cars are manufactured by the G. L. Stuebner Iron Works, Long Island City, N. Y. The mixer, which turns out sometimes as high as 550 cubic yards per day, is known as Carlin's Cube Mixer, and is made in Allegheny, Pa., and driven by a 20-horsepower Olney & Warrin engine by means of a 46-foot Clouser link belt, made by the Link Chain Belt Co. of New York. Since the mixer must be at a height so as to dump into the buckets which later deposit the concrete in place, the long chain drive was used so that the engine could be set upon the ground. Thus scaffolding was used for the engine and the cost of the chain was a very small percentage of the amount saved. The continual splashing of the cement in and about the mixer is always such as to make the time spent taking up the slack of leather belts, an annoying source of delay. This trouble is further augmented when leather belts are exposed to rain, and the heavy work required in mixing concrete makes necessary a drive without the possibility of slippage.

During cold weather a very quick setting cement was used and in addition warm water and steam were admitted to the admission chamber so that the cement would set before the temperature had been reduced to the freezing point.

The Williams Engineering & Contracting Co. has the contract for this work, and has been very explicit in the ordering of cement from the manufacturers, regarding the quick setting or the slow setting of the product during different seasons of the year.

About twelve revolutions of the mixture are considered sufficient, after which the concrete is dumped by gravity into another Stuebner bucket of the excelsior bottom dumping type. These were useful in handling the excavated material as well as in the delivery of concrete to the job. It was found that one engineer and one man to direct the exact point of dumping, were sufficient to operate these buckets, and the sharp angle formed by the bottom of the bucket was such as to make the work rapid because no time was wasted in scraping the concrete with shovels, as it was all discharged by gravity. The job was kept clean to a large extent as the splashing of the concrete during dumping was largely modified because the

bucket could be lowered almost into the forms while dumping owing to its construction. The concrete arch with a 46-foot span has reinforcing bars of the Concrete Steel Engineering Company's type.

The industrial railway mentioned above in addition to extending down grade to the water's edge from the bins, also from this point, ran down grade in the opposite direction encircling the job. Located at intervals along the track were the derricks, six in number, which lifted the blocks of stone from the cars and put them in place, or which picked up the concrete buckets and swung them in the proper point for dumping. These derricks have booms of Oregon pine about 16 inches in diameter and between 80 and 90 ft. long.

One hoisting engine operated the entire industrial railway system as follows: Since the engine is located at the top point of the track as regards the grade, cars can descend in either direction on either track being controlled by the brakeband on the engine drum. Or, the cars can be made to ascend in either direction on either track by winding up the two cables which are dead-ended in the train. It is also to be noted that one train of cars can ascend in one direction while another train of cars can simultaneously either ascend or descend as one of the drums can be used for winding under power while the other is slacking away controlled by the brake. Thus one engineer can operate two trains on 1,500 feet of double track. Another admirable feature of the arrangement is the fact that while there is a total of 3,000 feet of track, there is but 1,500 feet of cable, the result being less liability of accident since the track is clear of cable to the east of the hoisting engine if the train is being operated on that section of the track west of the hoisting engine. The way this is brought about is by having the cable arranged so that after leaving the idlers it can extend either to the east or to the west according to circumstances. These cables were part Roebling, part Waterbury, part Leschen and part Bascom. All the derricks were equipped with the Lockport block and operated by eleven National Hoisting engines, manufactured in Harrison, N. J.

Mr. Williams says that one of the derricks on the job was so arranged at the beginning of the work that it has handled over 70,000 yards of material, counting the excavation, hoisting and the depositing of concrete; this was done without moving the derrick and is perhaps the largest amount of material ever handled by a derrick without change of location. This, of course, is a matter of considerable importance as the time and expense for labor in frequent changes of machinery is a considerable loss. Two engines are located on a platform suspended above a street opening which penetrates the anchorage. Here again the contractor has allowed for increase in the size of the structure without necessitating a change of location of these two engines for many months to come. In addition one of these engines operates a derrick, perhaps 90 feet away from it in a direction opposite to the location of the boiler, so that piping expense and the heat loss in the winter time are both curtailed.

The claim of those interested in concrete construction has been very well substantiated by a careful study of this plant and it is proved that a plant for a concrete job is well laid out, can be operated with unskilled labor at comparative low cost for all kinds of concrete work from street pavements up to huge structures. The work has been designed and is being constructed under the direction of the Department of Bridges, New York City, James W. Stevenson, Commissioner; C. M. Ingersoll, Chief Engineer; C. F. Nichols, Consulting Engineer; H. D. Robinson, Engineer in Charge, and G. Baxter, Resident Engineer.

The contract was awarded February 9, 1905, to the Williams Engineering & Contracting Co., John Williams, President; Joseph H. Reilly, General Manager; I. P. Heath, Engineer, and John Lang, Master Mechanic.—*Chas. M. Ripley, in Dirt Remover.*

Gran-I-Tite Concrete Company of Jefferson County, Kentucky, has been formed with a capital stock of $3,000. The incorporators are Charles R. and John R. C. Long and Marshall E. Harding, all of Louisville.

The Concrete Frame Company has been incorporated in New York City for the purpose of making frames for the falsework to be used in the construction of buildings made of reinforced concrete. The capital stock is $10,000. The incorporators are Paul Kuhne, Walter F. Anderson and Paul Goepel, all of New York.

The Vulcanite Paving Company has a contract to build a two-story concrete factory, 27 by 100 feet, at Water and Tasker streets for J. T. Bailey & Company. The cost will be $15,000.

E. Herwick, a prominent contractor from Park River, N. Dak., is completing arrangements to erect a plant at Larimore, N. Dak., for the purpose of manufacturing all kinds of cement blocks.

Dodge & Day, architects, prepared the plans for a reinforced manufacturing plant to be erected by Frank B. Gilbreth of New York, for the S. L. Allen Company, at Fifth street and Allegheny avenue, at a cost aggregating $140,000.

The Superior Concrete Block and Brick Company has been incorporated at Boston, Mass., with a capitalization of $100,000. Frank I. Cobb of Winthrop, Mass., is president; Thomas Sewall, Boston, treasurer, and George M. Faulkner, Cambridge, secretary.

Rock Face Concrete Block and Brick Corporation has been formed at Norfolk, Va. The capitalization is about $10,000. W. D. Ward is president of the company; Edward Brockenbrough, vice president, William Old, Jr., secretary and treasurer, all of Norfolk.

The Buser Concrete Construction Company of Mt. Morris, Ill., has bought the entire outfit of cement working machinery of L. Dickermann at Stillman Valley. Mr. Dickermann is associated with the company and will continue to look after and superintend the work.

The Montreat Concrete and Building Company of Montreat, N. C., has been incorporated with an authorized capital of $50,000. The object of the company is to own and operate a concrete plant for making concrete cement blocks and other material used in construction.

The United States Concrete Company has been incorporated at Ogden, Utah, with a capitalization of $10,000. The company intends to manufacture concrete and cement. The officers are William Doyle, president and manager, and E. C. Olsen, secretary and treasurer.

Brinkley Concrete Block and Paving Company of Little Rock, Ark., has filed articles of incorporation with the secretary of the state showing a capital stock of $5,000. The officers are D. S. Coleman, president; W. S. McCullough, vice president; Jim Schults, secretary, and Frank Anderson, treasurer.

The Gibbs Cement and Concrete Block Company has been incorporated at Trenton, N. J., for the purpose of manufacturing cement and concrete blocks. The capital stock is $125,000. The incorporators are Wesley Gibbs, Albert Bower and William Selger, all of Trenton, N. J.

About Composition Roofing.

In a recent issue of Architectural Art and Its Allies there appeared a very interesting contribution by Thos. W. Kracke of New Orleans on the subject of "Roofing for Fine Office Structures."

The article refers especially to composition roofing, concerning which the author says in part:

"Roofing, as the building fraternity well knows, is a complex problem, to say the least, and is deserving of deep thought, study and consideration; in fact, it is practically a science in every sense of the word, and those in need of lasting roofing should not consult a novice. It is the new beginner who usually, in order to establish himself, cuts prices with a reckless disregard of the interests of his co-workers, frequently bringing about his own undoing, and very often establishing a precedent as to price values which it is hard to overcome in future.

"This explains the cause of the low and ruinous prices at present prevailing throughout this section, and why it is impossible to secure good and lasting work for inferior prices. Cheap work and cheap pay are handmaids; therefore, it is well to consider the responsibility of the roofing contractor from a financial standpoint to determine the validity of the guarantee. All guarantees should be made direct to the owner, and, wherever possible, the builder or general contractor should be made to share equally in such responsibility, thereby insuring better and more efficient workmanship throughout the entire structure and affording lasting results. Leaky roofs of this kind are frequently caused by some structural defect, such as settling of walls, weakness of timbers in frame, construction or defects in masonry, carpenter work, glazing, and last, but not least, metal work of the tinner, such as flashing, counter-flashing, skylights, outlets, etc., etc. But as it should happen, no other mechanic is expected, or exacted to give a long-time guarantee (to be precise, no guarantee whatever), consequently, the poor roofer has to shoulder the entire burden, and sometimes, in order to secure final payment of his account, in sheer desperation and for his own salvation has to make good the deficiencies of others. This is an injustice and a hardship from which all reputable roofing concerns should be absolved. There should be a requirement, compelling each sub-contractor to furnish at least a one-year guarantee covering his special work, thus insuring an improvement on existing conditions and placing the responsibility in event of trouble.

"The roof is, next to the foundation, one of the most important features of a builidng. Unlike the foundation, which is made to sustain the structure, often costing many hundreds or thousands of dollars, as the case may be, the roof is the guardian or watchman over the whole edifice, and in many instances it is but a very cheap makeshift, costing the owner but a few paltry dollars, although the roof's efficiency, to a certain extent, determined the building's relative value, by prolonging the life of the structure and maintaining lasting qualities. Thus, to attain as near perfection in roof construction as possible, should be the aim of the builder. To do otherwise is to practice false economy, which must sooner or later be redeemed manyfold in the cost of repairs and renewals, to say nothing of it being a constant source of annoyance. The roof should, so to speak, be the crowning event of the building, both in appearance and finish, and its lasting qualities should be sphinx-like. Twenty-five or fifty dollars per square should be considered cheap for roofing for the palatial and monumental structures in contemplation here, and which, no doubt, will mark an epoch of our building history, likewise an apostacy.

The truth is, we should try to follow in the footsteps of Chicago, New York, St. Louis, Pittsburg and other large cities, where the aim seems to be to attain perfection in roof construction.

* * *

"Composition roofing is in a class separate and distinct from all others. It is so universally well known and adopted that it advertises itself. This holds good when applied by responsible contractors, thereby usually bespeaking its own merits. One of its strong features is the unique manner of lapping the felt shingle fashion, nailing on the upper edge only, turning back the lower edge and sticking same with hot pitch to the width of the lap, replacing lap, etc., thus preventing exposure of nails to the weather and insuring lasting and wearing qualities. (This should be closely noted by contemplated users of ready roofing, whose sole object is economy.) Composition roofing, when properly applied, can truthfully be termed an unbroken blanket-like roof.

"The guarantee does not denote the life of the roof, but is simply an assurance to maintain the roof in water-tight condition for the period indicated. These roofs are often found in perfect condition long after the expiration of the guarantee. This is especially so if applied by trustworthy firms, and demonstrates conclusively that such concerns alone should be considered on important contracts.

"In conclusion, I wish to say, the subject having been hardly touched upon, we must, for fear of intrusion on your valuable space, refrain from expatiating on such features as its fireproof qualities, which are universally accredited; its initial cost; its non-condensing qualities; its cost of maintenance; its pliability and elasticity; its cost as compared with other good roofing materials, such as slate, tile or metal, etc., and its acid and vapor proof qualities, etc., etc. We must say, however, that it possesses the features that will commend it to all users of good roofing, it having no superior and being pre-eminently the best."

The Southern Roofing and Contracting Company, Norfolk, Va., has been incorporated by Edgar O. Young, president; W. H. Mullikin, vice-president and general manager; H. L. Barlow, secretary and treasurer; all of Norfolk. The declared capital stock is $10,000.

Sand-Lime Brick

Pioneers of the Far West.

The illustrations shown are made from photographs of the Colorado Brick and Artificial Stone Company's plant, situated within two miles of Colorado Springs, close to the town of Pikeview, and within fifteen hundred feet of the main line of the Denver & Rio Grande Railroad. This plant was erected in the fall and winter of 1904-5 and started operating the middle of February, making its first shipment in April. It was the first plant to make sand-lime brick in Colorado. The remarkable success achieved by this company in the rapid introduction and general acceptance of this building material by the best architects and builders is the strongest testimony to their progressiveness in constantly adding the latest machinery and devices for improving their product. This is evidenced by the large number of buildings of all kinds throughout the state (but more particularly in the capital city of Denver) that have been faced with this now popular white brick. It is conceded by the best authorities on the subject that no finer face brick is made in this country today. During the two years of constant operation the company's products have therefore become firmly established.

The plant, as will be seen from the illustration, is built against the side of a sandstone cliff, advantage being taken of the elevation of the sandstone above the press, so that the elevating and conveying appliances in the entire plant consist of three bucket elevators and one belt conveyor. The rock is dumped into the top of a high storage bin, which insures seven days' supply of dry rock. This bin, in the favorable climatic conditions, obviates the need of the ever troublesome drier. The rock feeds out automatically at the bottom of the bin, where it is shoveled into a nine-foot dry pan. The sandstone thus crushed is fed, together with the pulverized lime, through an automatic measuring machine into a tube mill (17x5 feet), which pulverizes the right proportion of sand and gives a very complete mixture. At the discharge end of the tube mill moisture is applied to slack the caustic lime, and thence the material is elevated to one of three silos (since the silo system is in vogue at this plant), each holding material for making 27,000 brick. After at least fifteen hours' seasoning, the material is conveyed on an 18-inch belt to an automatic feed agitator over the press, maintaining a regular and uniform mixture flowing down into the charger.

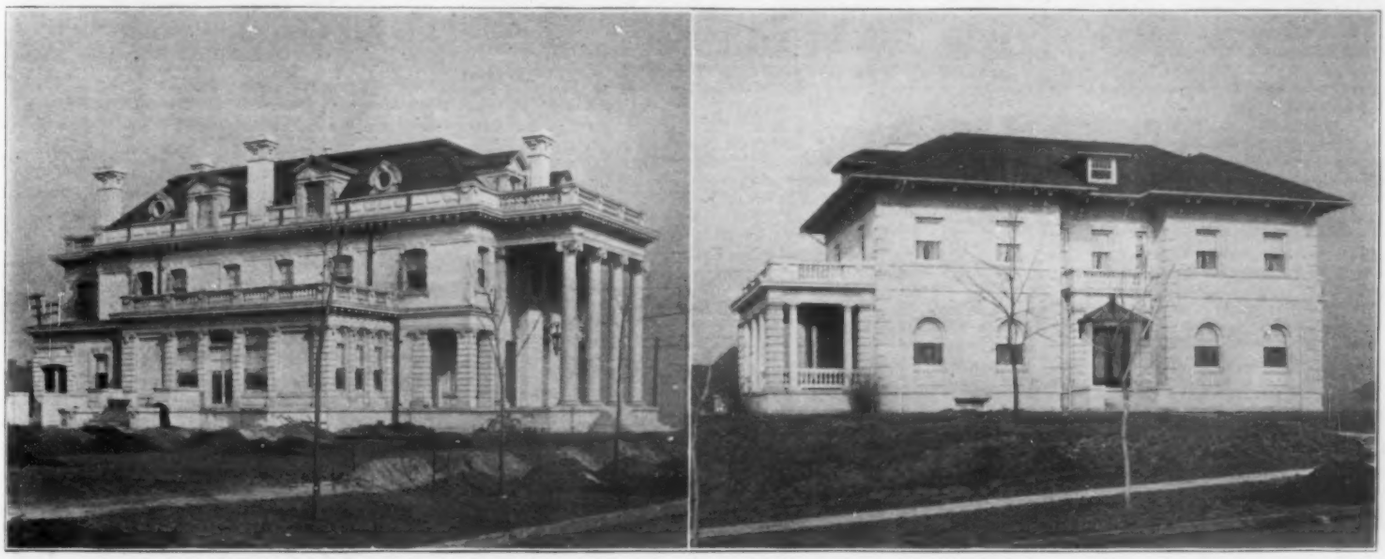
PLANT OF THE COLORADO BRICK AND ARTIFICIAL STONE CO., COLORADO SPRINGS, COL. ON THE DENVER AND RIO GRAND R. R.

The company has the first six-mold press, so far as we can learn, that was ever used in a sand-lime brick plant. Their order was a special one, given to the well-known firm of press builders, Chisholm, Boyd & White Company, who designed the heaviest and strongest press they had ever constructed. The makers have every reason to be proud of this machine and its record, as it has never broken down, and no stop in the plant has ever been due to its failure or inefficiency. This press is also equipped with two molds for making ashlar blocks, both rock and smooth face, both of which products have found a good market. The officers of the company have never regretted installing the six-mold type of press. With this press two men can quite easily take off 20,000 brick in a ten hour day, and can sometimes go as high as 21,000 per day, and this result is obtained by running the press at about six and three-quarter revolutions per minute, as against nine to eleven revolutions per minute on a four mold press with a daily capacity of but 18,000 brick.

Owing to its being the only "brick city" in the state, the company's chief market is in Denver, where a great many buildings have been faced with its brick and ashlar blocks, two of which buildings are illustrated below. The first building in the state of Colorado in which sand-lime brick was used is the handsome residence of Mr. Crawford Hill, and the residences of Mrs. Wm. C. Daniels and Mr. A. R. Wilfley were soon after faced with these white brick. F. L. Harnois was the architect for the first two named and Harlan Thomas for the last named.

The ashlar blocks made by this concern measure 8¼ inches wide by 16½ inches long by about 3 inches thick. They have been successfully used in a number of buildings where their fine, rich, cream color and durable qualities have won for them great popularity.

The company has furnished the face brick for the Carnegie Library (MacLaren & Thomas, architects), and a Fraternity Building (E. P. Varian, architect), in Boulder, Colo.; for the office building of the American Beet Sugar Company, at Lamar, Colo., and they now have a contract for the face brick of a church that is to be built at Lamar (T. P. Barber, architect). Their brick have been used for facing the inside walls of the handsome station recently completed by the Denver and Rio Grande Railroad Company, also employees' quarters; a fine residence and



SPECIMENS OF WORK DONE WITH THE PRODUCTS OF THE COLORADO BRICK AND ARTIFCIAL STONE CO., COLORADO SPRINGS, COL. BOTH ARE LOCATED IN DENVER.

some office and store buildings, all at Grand Junction, Colo. The artistic library building of the State Normal School, designed by Messrs. Roeschlaub & Son, now in course of construction at Greeley, Colo., is being faced with these brick, including over 3,000 shapes of several different varieties. Space does not permit enumerating more of the long list of buildings in which these brick have been laid.

The company has never made common brick, having found there was a sufficient demand for their entire product for facing the best residences and other buildings, but it has been obliged occasionally to meet a demand for a "second" quality brick for facing rear walls, areas, light shafts, etc., where the owners of buildings wished to economize somewhat by using a less uniformly white brick for less prominent walls.

The company has demonstrated that a variety of artificial sandstone, such as water tables, window and door sills and caps, columns, cornices, etc., etc., can be successfully manufactured of the same material as sand-lime brick. It can be but a question of a few years when brick will be only one of a number of building materials to be made by sand and lime process. The by-product will surely become a very important factor in the success of the sand-lime brick plant. Clark Mellen, the manager of this plant, is one of the livest wires in the business and is justly proud of the success that he has achieved.

Does It Pay to Grind Sand For Making Sand-Lime Brick?

The question whether it pays or not to grind sand for sand-lime brick has been agitated more or less in the past two years in America, and the conclusion arrived at is decidedly in favor of grinding a certain proportion of sand, no matter what the condition of the sand is in its natural state.

Several years ago Mr. Duerr, secretary of the National Association of Manufacturers of Sand-Lime Products, made a series of experiments in which he made brick from a bar sand containing the following mechanical analysis:

2.34% passed 100 mesh
7.02% passed 80 mesh
15.6 % passed 60 mesh
64.74% passed 40 mesh
95.94% passed 20 mesh

and all passing No. 10 mesh.

He found that by adding 5% of sand ground so that it would all pass 100 mesh he increased the strength of the brick, both crushing and transverse, over 100%.

He continued the experiment in series of tests of 5% ground sand up to 40%, and found that the best brick was obtained by adding 15% of ground sand, all of which would pass 100 mesh, thereby increasing the strength of the brick over 150%. This experiment was made by combining the sand with hydrated lime and making a mechanical mixture.

The experiment was then continued by taking the sand and grinding it in conjunction with hydrated lime; the results were practically the same.

The experiment was further continued by grinding 15% of sand with caustic lime and maturing this mixture in the silo; the result was an increased strength of 300% over the original results obtained without any grinding.

It has since been conceded that the best bricks are obtained by grinding from 15% to 20% of the sand, the percentage of fineness required depending somewhat on the mechanical analysis of the sand, applying the water to this mixture as it comes from the grinding machine, and then putting it in the silo for a sufficient length of time to thoroughly cure the mixture. The results obtained in this manner are much more uniform and reliable than any other mixture.

In grinding a certain percentage of sand with the caustic lime a most intimate mixture between the sand and lime is obtained and the material comes from the grinder at a temperature which is conducive to a rapid and immediate hydration, a condition most desirable for perfect brick.

It has been further found that the strength of the brick depends almost exclusively upon the 15% of fine sand which passes 100 mesh, and the quality of the brick is further improved if a large portion of this fine ground sand will pass 200 mesh.

It appears from chemical analysis that the chemical reaction between the sand and lime is principally formed with the lime and that portion of the sand which passes 100 mesh. In addition to this there is no sand found in nature so graded that by mixing it with lime all the voids are filled. Consequently the grinding of a portion of the sand not alone aids the chemical action, but also fills the voids and makes a denser brick which is much less porous, much firmer on the edges, and much more pleasing in appearance.

It was found that the brick which contained little or no sand passing 100 mesh would absorb as high as 18% of water, whereas the brick containing 15% of finely ground sand absorbed not over 11% of water.

In addition to this the mixture as it goes to the press is much more plastic, and fewer brick are lost by breakage than where no grinding is done.

Some manufacturers, in order to overcome their difficulties and obtain a brick which will stand a handling from the press and absorb less moisture, add additional lime. This, however, is an expensive method of overcoming the difficulty, for each per cent of lime added, lime costing $4.50 per ton, adds ten cents per thousand to the cost of the brick.

Many manufacturers object to grinding the sand on account of cost. This is not, however, as great as would at first appear. In an eight months' test of grinding sand and lime, in proportion of one part caustic lime to two parts sand, 90% passing 100 mesh and 75% passing 200 mesh, the cost per ton of material ground was 28 cents. This would make the grinding cost 17½ cents per thousand of brick, or less than the cost of 2% of lime.

The strength of the brick containing 6% of lime with ground sand under like conditions is greater than that of brick containing 10% of lime without ground sand.

There have been a number of different machines used in the grinding of sand and lime, such as the Tube Mill, the Griffin Mill, the dry pan, the wet pan, the emery mill, and the Fuller-Lehigh Pulverizer Mill. All these grinders have some one point of advantage, but the objection to the most of them is that there is no means of regulating the fineness of the material without putting in some separate attachment for screening or air separating, which is an additional expense and care. The Fuller-Lehigh Pulverizer Mill grinds the material and regulates the fineness and has proved a success. This mill gives many points of advantage over the others in quantity and quality of output, floor space occupied, original cost, and greatest economy per ton of output. The cost of grinding when compared with tube mill, taking into consideration power, wear and tear and repairs, is about two-thirds of that of the tube mill.

In America it has been found necessary to first pulverize the caustic lime so that all of the lime will pass 100 mesh before putting it through the tube mill with sand, as the tube allows a great many particles of lime to pass through which would not pass 100 mesh. These particles produce white specks in the bricks which prove detrimental to the sale of the material. This same difficulty applies to all grinding machinery where the output of the machine is not controlled by some screening device.

Sand-lime brick plants of America are introducing the Fuller-Lehigh Pulverizer Mill and many plants that have heretofore done no grinding are seeing the desirability of placing this machinery in their plants.

The Michigan Sand Brick Company, Grand Rapids, Mich., has been organized with a capital stock of $35,000 by H. W. Marsh and G. E. Anthony of Manistee and William Homison of Grand Rapids. They will at once proceed to erect a plant.

Savannah Sand-Lime Brick Company, Savannah, Ga., whose plant is located at Eden, is increasing the volume of its output up to 10,000,000 brick during the present season. It operated only about nine months last year, getting started in April, but made and sold more than 2,000,000 bricks at a very satisfactory profit to the promoters of the enterprise. J. F. Tietjen is president of the concern.

An acetate-of-lime plant will be established in connection with the Burrell chemical plant at Manistique, Mich. Condensed steam from the chemical plant and the furnace will be utilized to dry the acetate of lime, and the plant will have a capacity of about ten tons a day.

Complaints have been filed by residents of Salt Lake City, Utah, against the American Smelting and Refining Company for the heavy blasting done in their lime quarry, and an ordinance was introduced in the city council prohibiting blasting in lime and stone quarries inside the city limits. The measure was defeated.

Simon F. O'Hearn of Lee, Mass., has been charged with the larceny of $1,300 in cash from the Lee Lime Company, by whom he was employed for six years. The case will be tried this month.

For the Retailer

The National Builders' Supply Association

Meets Semi-Annually.

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Official Organ, ROCK PRODUCTS.

The Dealer a Specialist.

The retail building material man of old did not make much fuss about the fact that he handled cement. mill work and roofing material, but just jogged along a good deal the same old way the implement man did except that he did business when people came in and the implement man went out into the byways and hedges and discovered people who wanted to buy a threshing machine, cultivator or something else. Nowadays the retail dealer does likewise. He makes a poster out of his fence, builds a good shed; he departmentizes his business so that his lime house not only economizes handling of this fiery material, but he does not allow the warehouse to look like it was on the bum. He advertises in the county paper and he does not forget to keep in touch with the farmer who might be persuaded to put down a concrete floor in his barn or walks in his yard, and this "keep in touch" proposition of the retail dealer is responsible for a much larger trade than people have any idea.

The dealer called up the cement man and said, "I only have a few sacks of cement on hand. Send us a carload; I need it tomorrow." We have some farmers who come in every few days and they always take a dozen or half dozen bags of cement home because they are using it for 'most everything that they formerly used lumber for, and, as one cement manufac-

turer put it the other day—"there are a lot of farmers and they are prosperous, too." The constant effort of the dealer to keep before them the fact that he handles cement will show an increase in the volume of consumption, which makes a substantial expansion of business.

The dependence on a big government job or the prosperity of the cities will some day be a thing of the past; so, Mr. Dealer, you are the King Pin nowadays. You can assist in increasing the production of Portland cement to sixty million barrels in 1907 if you will cultivate the farmer as many of your competitors are doing.

Publicity Counts.

When the State Fair Association begins to figure on the fair for this fall, the retail building material man should figure on taking space to show in their gallery of pictures as to what uses portland cement can be put to, or have a little booklet on how the farmer could use lime; or, better still, build a cement block house, buy a cement post machine and put a few cement posts over back of the meeting house or any place in town where the farmer has to hitch his horse. It will be doing good, stunning advertising. Do not wait until fall is on, but try and have an exhibit at your county fair.

If there is any way that you can impress on the farmer that all roads lead to your building material warehouse, it is a good thing to do. If you are not getting out some good, catchy printed matter, or distributing the printed matter of the cement manufacturer you represent, it is a good time to start, as it is publicity that counts.

Western Building Material Business.

DENVER, COLO., May 5.—The trade in building materials in the Rocky Mountain section is gradually improving. It has never been considerable. This part of the country is so thinly populated that it is a matter of wonder that the present amount of cement, lime and plaster is disposed of in the west. The towns are so small and scarce, that some other market than sidewalks, curbs and gutters has to be found. There are few farmers, except in the small irrigable tracts, so it is natural there should be a small demand for building material.

The lime used in this section comes mainly from Missouri and Arkansas. It costs at the kilns seventeen cents, and about thirty-four cents per bushel delivered in Colorado and southern Wyoming. In Colorado Common Points it retails at various prices, from 50 to 55 cents per bushel. Hydrated lime, and "Limeplaster," are attracting some attention, but not so much as they deserve. The time will come, by the saving and convenience of the latter, and the fact that it can be shipped in mixed cars with hardwall plaster and cement, to all of the small scattered settlements, when it will be used largely in place of lump lime.

The wall plaster used is made by a dozen factories in Texas, Indian Territory, Kansas, Wyoming and Utah, beside the large Colorado plant, which makes Colorado cement. It sells at vastly different prices in different sections, owing to the difference in freight rates, but ranges from about $5.20 wholesale Denver and $8 retail, to $20 per ton in Nevada.

There is only one large cement plant in this section located at Portland, Colorado, but it has competitors on both sides, viz., Kansas and Utah. Prices prevailing here are based on about $2.30 per barrel at Colorado cities.

There has been a large amount of cement used by the Reclamation Service of the United States Government, which has helped the Colorado manufacturers materially. The irrigation schemes have also used some cement, but the railroad companies have used the most, in their culverts and other work. New cement plants are started in every state, and two or three in some states. The business in this section will apparently be greatly overdone and prices naturally much lower than they are now.

If you have an old tumbledown shed, don't you think it is a poor advertisement? A man who is supposed to sell building material can make more money out of his business if he will demonstrate to the farmer that he has the best materials and his own office and shed is a living example. Take the tailor in your town; he will wear red vests and pink overcoats to advertise his goods. Why should not you have a good shed, an attractive office and a comfortable place for the customer?

WAREHOUSE OF SANDERS, MORRISON & CHRISTENSON, MINNEAPOLIS, MINN.

The Mason Material Dealers' Association of the state of Connecticut, which usually holds its annual convention in May, has postponed the date to some time in June yet to be definitely determined by the directors. F. H. Johnston of New Britain is the secretary.

The Pine Creek Supply Company, Etna, Pa., has been incorporated with a capital stock of $25,000. The incorporators are John N. Tarpy, Allegheny; C. B. Williams, Etna; C. A. Poe, Hugh M. Hoye, Glenfield; and Chas. D. Charlton, Pittsburg. The organizers recently purchased the coal yard of the Thomas Brothers with two and a half acres of ground lying next adjacent, which adjoins the Pittsburg & Western Railroad. They will continue in the coal business and handle cement, lime, plaster, sewer pipe and other building materials upon an extensive scale. The same parties are also interested in a new ice plant located at Etna which is now under construction and will be completed by July 1st with a daily capacity of 150 tons.

The Xenia Sand, Lime and Brick Company, Xenia, O., has been incorporated with a capital stock of $30,000 by A. W. Anderson, Grant Miller, Chas. Darlington, J. D. Steele and W. H. Farey. They will take over the brick manufacturing establishment which is already doing a good business and enter the builders' supply business on a large scale.

The Grand Canyon Lime and Cement Company, Nelson, Ariz., has to answer before the United States Grand Jury as *particeps criminis* with the Santa Fe Railway Company as party accepting a rebate which the railroad company is accused of allowing the supply concern. This is indeed a unique position for a supply dealer to get himself into. No such case has ever happened that anybody knows about this side of the Rocky mountains. This information is given because we know that it will give a great deal of pleasure to the supply dealers who are accustomed to dig deep in their jeans to pay for all kinds of car service and mysterious rulings on the part of the railroads. The mere thought of a supply dealer being in such high favor with a railroad as to actually be able to get anything from the railroad is glory enough for one day even if our Arizona friends should be so unfortunate as to have to settle with Uncle Sam. The amount involved in this case only represents a few dollars and we fear very much that under investigation it will shrink into nothing at all. We are not so well posted about these kinds of matters in Arizona, but if such a report was to get out in Ohio, Indiana, Illinois, Michigan or Wisconsin, we would know without investigation that some mistake had been made and we would be very likely to print the item exactly the opposite way merely from habit.

The Bell-Bockel Stone Company, Altoona, Pa., has completed its fine new crusher plant located near Columbus Park. The plant is one of the most complete and up-to-date in western Pennsylvania, and has a capacity of about 400 tons of crushed limestone per day. W. E. Bell, John R. Bockel and John Riddle compose the company.

The J. C. Johnson Company, Manitowoc, Wis., erected an additional warehouse last winter which is capable of holding 4,000 barrels of cement. They are at the present time erecting a patented lime storage shed to take the place of two inefficient sheds which they formerly used. The new warehouse mentioned above is located between the Chicago & North-Western and the Wisconsin Central railroad tracks, with sidings to both roads. This concern will erect another warehouse this summer on their dock property, so as to be in position to receive and ship cement and other building materials by water.

Xemlein & Leahy, Queens Borough, N. Y., have incorporated their interests and will deal in building materials at Long Island City. The incorporators are Henry Kemlein, J. J. Leahy of Long Island City and S. P. Miller of Pittsburg, Pa.

If you are not pushing crushed stone and crushed granite for topping or mixing in sidewalks, get a connection through ROCK PRODUCTS to buy this material and then push it.

You have been waiting for the price of cement to go down, and there is not much chance. It looks like a cement manufacturers' year again and that means high-priced cement.

The J. E. Bartlett Company, Jackson, Mich., has secured the entire output of the immense Burt Portland cement plant at Bellevue, Mich. This plant has been thoroughly overhauled during the past winter, and a number of important improvements have been made.

The Universal Crushed Stone Company of Chicago, Ill., has issued $600,000 worth of twenty-year consolidated first mortgage 5% coupon bonds to procure funds for extending the Ives stone quarries, which they recently acquired.

Four Big Warehouses.

The Maryland Lime and Cement Company of Baltimore, of which Chas. H. Classen is proprietor, has handsome offices in the Carroll Building, corner Baltimore and Light streets. They are among the largest building supply men in Baltimore and are the agents for Lehigh Portland cement as well as Rosendale and other natural cements. They also manufacture lime and carry a complete line of masons' materials. They report the spring business as opening up a trifle slowly but with the advent of the warm spring weather they expect that building operations will have begun in earnest and they will be getting their share of the trade.

This concern is not only one of the largest but one of the best known in this section. They maintain four warehouses in different sections of the city in order to supply their trade with the least possible delay.

Clay.

Return of the Tile Roof.

Tile, when properly formed, baked and laid on any structure rightly designed to carry it, is the most beautiful roof covering yet devised, but when not properly formed, baked and laid, or laid on buildings for which it is not rightly intended, tile may be not only the ugliest, but the least serviceable of coverings.

Four hundred and thirty years ago it was provided by law in England that for the making of tiles "clay should be dug before November, and be stirred and turned before March," and today the very old tile is considered much better than the new. The same care is not taken in turning out the commercial tile in use at the present time. A good, hard-burnt tile lasts indefinitely; a thing of beauty, it comes very near being a joy forever; it is delightful in color, charming in form, and useful in service. A poor tile has little to recommend it. The hard-burned tile is, comparatively speaking, impervious to moisture, while those half baked, out of poor clay, not only absorb moisture, but in a damp climate grow a luxuriant crop of vegetation, which may be very picturesque on outbuildings where dryness is not a prime essential, but not altogether desirable on a dwelling.

Crudely Made Clay Tiles.

The Mission fathers no doubt followed the ancient custom of kneading or working the clay in pits under the hoofs of animals, then giving it time to ferment properly. The tiles were probably made by spreading the right quantity of clay on a board or flat surface, patting it to a cake of the right thickness and size, then deftly flopping it over a half-round piece of board which was first well sanded so the clay would not adhere. The clay was pressed and shaped to the form by hand, trimmed about the edges, dried in the sun, and fired more or less perfectly in small kilns. The pressure of the hand gave the tile a consistency and a surface which machine-made tiles lacked. The latter are more or less porous.

The Above Style.

The quality of the tile differed with the clay of different localities, and with the care and skill of the makers. Some are soft and very irregular, others are comparatively hard and true. Throughout the Southwest a great variety of clay is found, from the sticky adobe, which is little more than a tenacious mud in places, to fine potter's clay. The Mission builders took their clay as they found it and made the best of it. Transportation was too difficult in those days for them to seek and develop the finer deposits.

The thickness, size and irregularities of these old tiles and the marks of the hand which shaped them are fairly well indicated in the illustrations. The dimensions of those shown are: Length, 23 inches; width of broad end, 12 inches; width of narrow end, 8 inches; depth, 4½ at end, diminishing to 3½ at narrow, thickness varied from ⅜ to ¾ of an inch. There are no holes for nails or other fastenings. Neither are the corners clipped to economize in laying. It is a delight to caress these old tiles just as it is a delight to pass one's hand over a piece of fine pottery, for, after all, the fingers appreciate good modeling better than the eyes.

The manner of laying these old tiles is shown in the illustrations. The bed of mud or adobe over the thick matting of brush on the irregular round rafters made a soft and yielding foundation for the tile. The unequal sag relieved the roof of all flat and hard lines.

Some years ago a French publication attempted to arrive at some rule for the pitch of roofs, based upon climatic conditions. The globe between the equator and the polar circle was divided into twenty-four belts or bands parallel to the equator, but of unequal size, depending upon the length of the longest day. Allowances were made for dryer and damper climates, as well as for the shape of various tiles; roofs covered with hollow tile, like the Mission, require less slope than do those overlaid with the Roman style, and these require less than do the plain tile or slate roofs. A table evolved in accordance with the theory may be given as follows:

Locality.	Hollow Tiles.	Plain Tiles.
Southern Spain—pitch	16 deg. 12 min.	24 deg. 12 min.
Southern Italy	18 deg. 12 min.	26 deg. 12 min.
Southern France	21 deg.	29 deg.
Northern France	24 deg. 36 min.	32 deg. 36 min.
Northern Germany	28 deg. 36 min.	36 deg. 36 min.
England (London)	27 deg. 24 min.	35 deg. 24 min.
Scotland	33 deg. 12 min.	42 deg. 12 min.
Sweden, Russia and Norway (average)	30 deg.	49 deg.
According to the above table Southern California would require about	17 deg.	26 deg.

Today there is a considerable renaissance in the use of old tiles, but they are distinctly out of keeping with many of the modern structures on which they are employed, being peculiarly fitted to the old rambling Mission style of architecture.

In the attempts to produce tiles which will "lay tight" and be impervious to rain and snow, many forms and queer and homely patterns are produced. Many of them are half-baked and soft. The older a tile the better it is for roofing purposes, so that second hand ones are always in demand; a new tile cannot be so good as one in which the tiny pores have been filled with dust and dirt through long usage, thus permitting it to shed water more readily.

Fire Brick Factory Near Chicago.

The Harbison-Walker Refractories Company of Pittsburg, Pa., has completed arrangements to erect a $350,000 firebrick plant at Indiana Harbor, Ind., about 19 miles from Chicago. A. L. Staring of Pittsburg, a widely traveled expert, says that the ganaster beds in the coal district of Pennsylvania are almost worked out, and that the Wisconsin source of supply is the best now available.

The main building of the plant at Indiana Harbor will be 400 by 500 feet, of steel frame with brick veneer exterior. The structure will be in the center of the company's 25-acre tract, and will be readily accessible to lake and rail transportation. Every eastern and southern road out of Chicago passes within a mile of the plant.

Big Consolidation.

It is reported that a deal has been consummated to consolidate all the firebrick manufacturing companies of St. Louis, Mo. The capital stock of the corporation will be $5,000,000. Options, it is said, have been obtained on the plants of the Laclede Fire Brick Manufacturing Company, the Christy Fire Clay Company, the Mississippi Glass Company, the Missouri Fire Brick Company, the Parker-Russell Mining and Manufacturing Company, and the St. Louis Vitrified and Fire Brick Company. Walter J. Holbrook, president of the Holbrook-Blackwelder Real Estate Trust Company, is promoting the merger.

Common Brick Prices Advance.

Prices on common brick in Chicago are now $7 per thousand, an advance of $2 over the selling price two months ago. Practically all the brick companies are asking this price. Frosty weather has made it unsatisfactory for running the summer plants, and there has been less made by them thus far this season than for several years. A leading brickmaker says that there is a shortage of nearly 50,000,000 bricks as compared with the number produced last year.

Forced to Shut Down.

The Western Stoneware Association has issued orders to shut down both the association plants at Macomb, Ill. One of the factories at Monmouth, Ill., has also been closed, as well as the plant at Clinton. It is an undeniable fact that there is a large amount of stoneware on hand, and the factory operations will not be resumed until much of this is disposed of.

Shrinkage of Clay.

The crucial test of a clay is its behavior under fire. A narrow vitrification range condemns most clay for the making of vitrified products. Clays differ greatly in this respect and in making a burning test of clay the vitrification should be carried beyond the point at which the best body is obtained, in order to see how much margin there is between this point and the point at which the ware would have no commercial value.

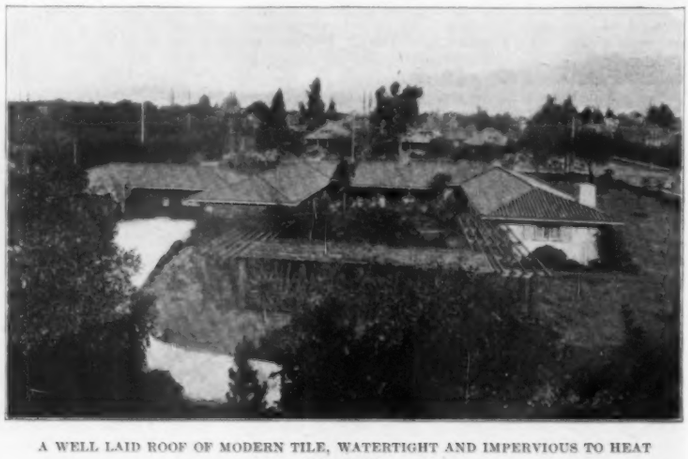
The practical importance of determining the amount of the shrinkage of clay, both the air and fire shrinkage, is for the purpose of knowing the size of the molds in order to have the required size when burned. The amount of shrinkage of any given clay depends on the method of working—upon the density of the product, the temperature at which it is burned and, with thick pieces, the length of time that it is subjected to heat. With different clays the variation depends chiefly upon the texture of the clays, the fine-grained shrinking the more. The amount of combined water and other volatile matter also affects the shrinkage, the escape of the volatile substances leaving the clay porous and giving more room for shrinkage.

The fire shrinkage of clays varies from 0 to 15 per cent. Wheeler gives the average fire shrinkage of different clays as follows:

Flint fire clays	Average of 9 samples, 9.9	per cent
Kaolins	Average of 7 samples, 8.8	per cent
Fire and potters' clay	Average of 58 samples, 5.4	per cent
Loess clays	Average of 25 samples, 4.5	per cent
Gumbo clays	Average of 2 samples, 1.45	per cent

The Pacific Clay Company of Oakland, Cal., has bought 25 acres of land at Vallejo, Cal., where it will erect a brick plant.

THE HEAVY OLD MASSIVE TILES WERE DESIGNED FOR BUILDINGS THAT WERE STRUCTURALLY MASSIVE.



A WELL LAID ROOF OF MODERN TILE, WATERTIGHT AND IMPERVIOUS TO HEAT AND COLD.

Plaster.

James Dugan of the Acme Cement Plaster Company of St. Louis dropped into Chicago the other day and inquired as to business conditions, although I do not know of anyone who has his finger on the pulse of those conditions any more than our friend Dugan. He says, "What is steel doing? What is yellow pine going to do in price?" Crop conditions in some parts of the West have been affected by Jack Frost, but we are not discouraged at the outlook. With the financial conditions now prevailing in the Southwest, there should be no difficulty in having a good volume of business in 1907. Crop conditions, of course, may affect trade, but at the present time business is good, considering the fact that the sun was under a cloud for practically thirty days.

John A. Kling, president of the Cleveland Builders' Supply Company and the American Gypsum Company of Cleveland, was in Chicago last week. He discovered in some parts of the country that business was not as active as it might be, but with a late spring what could be expected? He was enthusiastic over the enlarged operations of the American Gypsum Company and the fact that their new plant in New York state will soon be completed and in commission. He also suggested enlarged operations of the Cleveland Builders' Supply Company in the lime line and they are preparing to handle a large volume of business in 1907. We are very glad to see Mr. Kling looking so well after his serious accident of a year ago and, although he is not able to cross the hotel lobby with the same alacrity, he looks better than we have seen him for several years. It is wonderful what will power will do toward making a man strong after being used for knocking floors out because the elevator shaft was not large enough.

The Jackson Plaster Company, Jackson, Mich., has been organized with a capital stock of $10,000 by local capitalists.

The Nevada Commercial League at Reno, Nev., have secured a location for the Marbleite Plaster Company's new mill within a short distance of the city of Reno.

Fire originating in the plant of the California Wood Fiber Plaster Company at Emeryville, Cal., caused a damage of nearly $80,000 and destroyed four large business buildings and damaged several others in the immediate vicinity.

The King Plaster Company, which recently located its plant in Lansing, Mich., between the Michigan Central and Pere Marquette tracks, shipped its first carload of plaster April 24. The plant is turning out 25 tons of plaster per day, and advance orders have been such as to indicate a demand more than equal to such capacity.

The Nashville Wood Plaster Company, Nashville, Tenn., has pushed the construction of the buildings for its plant as rapidly as possible. It expects to begin the manufacture of a high-grade wood-fibered plaster by the middle of July or the first of August so as to be in the market for the fall trade. This is the first factory of its kind to be located in the South.

The journeymen plasterers of Norfolk, Va., who have been engaged in completing the buildings at the Jamestown Exposition, went on a strike the first of May because, for some reason, there was a delay in the payment of money due them by the contractors. The matter was adjusted between the representatives of the workmen and W. E. Cottrell, Superintendent of Works of the Jamestown Exposition Company, and it was formally announced on May 6 that an agreement had been reached to the effect that the plasterers would complete their work upon the buildings as quickly as possible.

Great Praise for Universal.

"Universal"—that new fibered coating material recently put on the market by the United States Gypsum Company—is steadily growing in popularity, and it is possible that it will soon outstrip all the other plaster products in the estimation of both the dealers and the practical plasterers who have the working of it.

The manufacturers of Universal are simply snowed under with voluntary letters, all bearing testimony to the high appreciation in which their product is held. Lime, when kept in stock, is air-slacked and rapidly deteriorates in value, but Universal, which is not a substitute but a decided improvement, does not. Every bag that the dealer buys is a safe, positive asset on which he can easily figure the profit.

The up-to-daters in the supply business are already beyond the experimental stage with Universal. No plasterer is ever induced to use it without coming back with re-orders for "some more of that same kind."

Business Looks Good.

FORT DODGE, IA., May 6.—The cold weather which has been everywhere in evidence, had a most depressing effect upon building. All of the stucco mills at this place have enjoyed a splendid business during the early part of the year, but the past two weeks have served to put a damper on orders. Business on the Pacific coast has been good, and orders have been filled promptly despite the car shortage. This was accomplished by using refrigerator cars loaded with fruit for the middle west and returned to the coast loaded with stucco.

The starting up of two new stucco mills has added materially to Fort Dodge as a stucco center. The American Independent Gypsum Company and the Iowa Hard Plaster Company are both completed and in running order.

The Plymouth Clay Products Company is rushing its sewer pipe factory along with a large force of hands. The plant will occupy two city blocks and have a capacity of 15,000 cars. The present equipment will consist of a one press shop, but the buildings and plans are so arranged that a second press shop can be added next year. The contractors expect to have the plant in condition to start operations September 1. Clay for the plant will be secured from the mine of the Plymouth Gypsum Company which adjoins the new plant. A very fine vein of clay lies under the gypsum rock at a depth of 75 feet and the same hoist that brings up gypsum rock will bring clay for the sewer pipe factory.

Work on the Sackett plaster board factory is well advanced and a large force of men are rushing the plant to completion. The contractors hope to have it ready for business in the course of a couple of months.

Moving Into Their New Office.

The American Cement Plaster Company has completed its new office building alongside the great plant at Lawrence, Kas. The building is an unusually pretty one and is remarkably handy. It was designed by W. T. Wellman, a local architect, under the suggestions of J. A. Henley, president and general manager of the company. The interior walls exhibit the kind of plastering materials that are made by the American Cement Plaster Company, being arranged so as to produce the two colors representing a dark and a light marble. It is handsomely finished and trimmed with quartered oak, has fine hardwood floors and is a credit to the successful establisment of which it is to be the head office.

When J. A. Henley went into the cement plaster business at Lawrence, it is doubtful if he himself knew the possibilities of such an industry or placed an adequate value upon the raw materials in this locality. Certain it is that other people did not. He is a man who has shown remarkable capacity for business in everything that he has undertaken and the wonderful success of this company is due in a large measure to his personal indefatigable efforts. He has watched the cement plaster business closely and knows every nook and corner of the market and is recognized as one of the best plaster men in the country.

Ben A. Williams, who was connected with Mr. Henley's former business operations in the manufacture of wire, has had charge of the field work of the plaster company since the time of its inception. R. A. Henley is general superintendent of the business. These three men are the active heads of the operations that have won success for the American Cement Plaster Company.

The completion and occupancy of this new home indicates the permanency of the institution at the place where it was founded and has grown to importance.

Wood Fiber Information.

The Information Bureau of ROCK PRODUCTS recently received the following inquiry:

"I shall be pleased to know something about the manufacture of wood fiber such as is used in the production of wood fiber plaster. Is it employed instead of hair in ordinary plastering mixtures? What is the market price of such a commodity and is there any reliable demand for it?"

In the regular system of the Information Department the following interesting information with regard to plaster productions was brought out and is handed to the readers of ROCK PRODUCTS with the hope that it may be of some benefit to them:

Wood fiber is made of soft woods such as cottonwood, gum and the softer varieties of poplar. The timber is first cut into blocks two feet long, the exact measurement being determined by the feed of the machine that is to be employed in converting it into wood fiber. When properly fed to the machine, by a mechanical process, a cylinder with projecting teeth is made to revolve so as to cut the timber into fine strips or "curls," which are then dried and become wood fiber ready to mix into the plaster in the place of hair or other fiber. It will be seen at once that this is a very cheap process, as the timber can be bought as cheap as cord wood. When introduced into the plaster mixture, a better material is obtained than that made with any other fiber, as it binds the plaster and makes it much stronger. Any common laborer can feed and attend to the machine and the cost of the wood fiber depends upon the cost of the timber, as the machine requires only about four or five horse power to drive it.

Another well qualified authority on the subject says:

Wood fiber is rapidly growing in popularity, and it is destined to have a great sale in the future. It has had and is still having a hard fight for recognition in some of the larger cities of this company, owing probably to the conservatism of some architects with respect to specifying the use of a new plastering material. There is quite a demand for wood fiber by plaster manufacturers who are not themselves favorably situated for producing it economically. Its demand, we believe, will greatly increase from this time forward. We consider, however, that before the manufacture of wood fiber for the trade can be reduced to a practical commercial basis it will be necessary to find some way to thoroughly dry the fiber, sufficiently, at least, to prevent it from molding when shipped considerable distances. It will also be necessary to press it into sacks or bales so as to reduce the bulk about 75 per cent. The supply of fiber is only intermittent and so far as we are aware is somewhat light, being packed up green and so loosely that it is very bulky and the weights are never guaranteed.

It is a question which experience only can determine over how great a radius of territory this green fiber can be successfully marketed. Judging from casual observations made in different sections where we have made the fiber, incidentally, to test our machines before shipment from the factory, it molds very quickly when carelessly thrown into a pile, consequently we suspect that green fiber could not be sent very far. We know of wood fiber being shipped fresh from the saws from Ohio to New England and as far west as Iowa, but at present the buyers have to take what they can get, for, as we said before, the supply is intermittent and there is almost no competition in the business.

The Georgia Wood Fiber Plaster Company, at Atlanta, Ga., dry their fiber for use in the plaster that they manufacture, as they consider the mixture contained in the fiber has a tendency to slake the stucco and thus weaken the product somewhat. According to their method the fiber is delivered into a very large bin beneath the floor of the factory into which has been introduced a series of steam pumps, the heat from which radiates in such a way as to dry the fiber contained in the bin. It is really a simple and not expensive arrangement.

Where plaster manufacturers are reasonably near to suitable fiber-yielding timber, we would not expect that they would depend upon buying their fiber, for the profit saved on their fiber should amount to an item in the profits on their plaster. Wood fiber can be made with little expense for labor, as ordinarily the engineer of the plaster plant can run the fiber machines, but he must have the logs peeled for him. One man can easily run several of our fiber machines provided the logs are peeled for him first.

The fields for the sale of wood fiber are those sections where fiber wood is scarce, and there are plenty of them and in such localities a good price can be had for it. To put the price down to a point where it would attract that class of customers who can profitably make their own fiber would rob the business of fiber-making of its present attractive profits. Anyone who can find suitable timber within a few hundred miles of such localities and will dry the fiber sufficiently so that it can be shipped in safety should be able to build up a good trade. New York state and New England would take a large amount of wood fiber, and after the great cities of the country have taken hold of wood fiber plaster, as they are certain to do in the near future, the demand for this product will be almost unlimited.

Wood fiber is not used in plaster exactly as a substitute for hair; it serves as a binder, but is used more particularly to give bulk and lightness to the wall. It deadens the sound-conveying qualities of the plaster and it increases its covering capacity.

Makers of wood fiber located at Ohio shipping points get from $15 to $18 per ton for it, sacked, f. o. b. cars at the mill.

The Olympia Plaster Company, Olympia, Wash., has had the name "Olympia Wood Fiber Plaster" copyrighted as its trademark to prevent the infringing of the reputation which it has built up for its goods.

Sand and Gravel.

Requirements of Glass Sand.

BY ERNEST F. BURCHARD.

Sand is the major constituent of glass, constituting from 52 to 65 per cent of the mass of the original mixture, or from 60 to 75 per cent of the finished product after melting has driven off carbon dioxide, sulphur dioxide, and other volatile materials. To the sand is due the absence of color (according to its purity), the transparency, brilliancy, and hardness of glass. In other words, the quality of glass depends largely on the quality of the sand. For the finest flint ware, such as optical and cut glass, "water whiteness," absolute transparency, great brilliance, and uniform density are required, and only the purest sand can be employed, since slight impurities, especially small quantities of iron, tend to destroy these effects. For plate and window glass, which are commonly pale green, absolute purity is not so essential, but generally the sand should not carry more than two-tenths per cent of ferric oxide. Green and amber glass for bottles, jars, and rough structural work can be made from sand relatively high in impurities. An excess of the chief impurity, iron, is usually avoided in the quarries by a careful selection of the whitest sand, although the whitest is not invariably the purest. Repeated washing tends to remove the iron. Magnetic separators also have been resorted to, especially when the iron is present in the form of magnetite. Clay materials are objectionable because they cloud the glass. Washing helps to remove them, since they occur usually in a very finely divided state. Magnesia, which is more apt to be introduced into glass materials through limestone than through sand, is troublesome because it renders the batch less fusible. If the sand is derived from indurated sandstone the latter should be friable or easily crushed. In examining sand, in order to ascertain its value for glass-making purposes, inspection with a magnifying glass is the best preliminary test. The following points should be observed. The sand should be nearly white in color; it should be of medium fineness (passing a 20 to 50 mesh horizontal sieve); the grains should be uniform in size, even, and angular, or, less preferably, they may be rounded. A simple chemical test may be employed by heating the sand in a dilute acid. Effervescence indicates the presence of lime; loss of color shows the presence of clay impurities. Iron in the most minute quantity may be detected by dissolving sand in hydrofluoric acid and adding potassium ferrocyanide, which produces a blue precipitate if iron is present. Complete quantitative analyses as well as a furnace test should be made as a final determination of the character of a prospective glass sand. The impression has long prevailed, especially among writers on the subject of glass making, that round-grained sands are at a decided disadvantage in comparison with the sharp, angular variety. Practice seems to disagree with this idea, at least in the case of the Mississippi Valley plants, where smooth, rounded sand is successfully used for all ordinary varieties of glass and for some fine flint ware. As a rule, no very close check is kept on materials by manufacturers of the ordinary commercial grades of glass. Results are watched with care, however, and experience with certain materials usually determines their use or rejection. Sand uniformly finer than one-sixtieth inch is said to "burn out" in the batch and not to produce as much glass per unit of weight as does coarser sand. In a mixture of coarse and fine sand the finer sand is liable to settle to the bottom of the batch, thus preventing an even mixture of the materials and producing in consequence a glass uneven in texture.

Analysis of Glass Sand Used by American Window Glass Co.

Constituent.	No. 1.	No. 2.	No. 3.	No. 4.
Silica (SiO_2)	99.990	99.714	99.659	99.579
Alumina (Al_2O_3)	.008	.280	.310	.350
Iron oxide (Fe_2O_3)..	Slight trace.	.006	.011	.021
Lime and magnesia (CaO and MgO).	.002	.020	.020	.050
	100.000	100.020	100.000	100.000

No. 1 is suitable for the very highest grades of glassware and flint glass. Nos. 2 and 3 are suitable for tableware, plateglass, chimneys, prescription ware, etc., and No. 4 is used for window glass.

Proposed Combine of Sand and Gravel Interests

A rumor is going the rounds of the building material interests of Chicago that the sand and gravel interests are to be consolidated.

A. E. Smith of Milwaukee, Wis., who is said to represent eastern capital, is the promoter of the merger. Mr. Smith is the man who, a few years ago, representing eastern capital, combined all the ice distributers and manufacturers of Chicago as the Knickerbocker Ice Company.

This company, which has cornered the ice market in Chicago, frozen out the dealers and firms and boosted the price of ice to a point where it is either pay or perish, has established a building material department. This venture was made about two years ago. It now handles building material and is a producer of sand and gravel. The annual statement last year showed that this department paid a sufficient dividend to warrant its extension and promotion.

The same Mr. Smith has now approached the sand and gravel operators with a proposition to sell. The large producers have named an upset figure and the proposition is hanging fire. Mr. Smith left Chicago after finishing his missionary work with his figures in his pocket to consult the eastern capitalists.

The Point Gratiot Sand and Gravel Company has filed articles of incorporation and will enter business at Mayville, N. Y. The capital stock is given as $12,000.

A new concern organized by L. A., R. M., and M. T. Noll, A. B. Fisher and M. Oesterle is the Ohio River Sand Company of Marietta, O., capitalized at $25,000.

F. Codman Ford, leading supply dealer at 306 Baronne street, New Orleans, La., has arranged to handle the output of the well known Sullivan Chatawa concrete gravel pit. Mr. Ford is located on the Illinois Central tracks, and is in a position to furnish carload lots for city delivery.

B. S. Hutchins of Des Moines, Ia., is making arrangements to start a sand-pumping station at Shenandoah. He will pump from the Nisnabotna river, which has an immense supply of sand, and will locate on the Wabash railroad. Mr. Hutchins expects to ship out at least a thousand cars a year. He already has plants at Des Moines and Red Oak, Ia.

A project of much importance to the district around Forest, Sierra county, Cal., is the opening up of property known as the "Mott Claim," consisting of land along the old Bald Mountain extension channel. The owners are C. E. Mott and Murdock Morrison. It is thought that within two months the property will become a gravel producing claim that will be as prolific as are others in this same locality.

Orland gravel is rapidly growing in popularity, say reports from Colusa, Cal. The Southern Pacific Company keeps a cement pipe factory in operation there continually, because the gravel in that section is well adapted to the cement work which the company uses in its culverts all through the state. At Greenwood Switch, near Colusa, is located a gravel pit which produces material that is particularly valuable in paving because of the clay it contains, which causes it to pack well.

The Sturtevant Mill Company, Boston, Mass., desires to call particular attention of parties interested in rock breaking, crushing and pulverizing propositions to its roll jaw fine crushers, fully shown and described in its catalogue. They remark: "These machines are entirely different from ordinary crushers, the jaw action being unlike any others. It is impossible with common crushers to get fine work, for the jaws open and close at the bottom, discharging first fine and then coarse material. This is not so with roll jaws, for these can be set ½ inch apart and deliver ½-inch product; that is, the coarsest is ½ inch, and the balance much finer. The jaw action enabling this remarkably fine work is most simple, the moving jaw simply rolling over and dropping the material caught between them. No clogging, no pinching or crowding. The result closely resembles the work of a common crusher followed by two sets of rolls. The economy of this crusher is obvious. With jaw and toggle action the wear is slight, and with manganese and tool steel wearing parts, economy is insured. These fine crushers followed by our balanced rolls reduce ore to sand rapidly and more economically than by any method we know of.

"When 20 or 30 mesh is desired our Centrifugal Finishing Rolls give good results."

Side Talk

A Popular Mixer.

The popularity of the Standard Continuous Concrete Mixer, made by the Standard Machine Company of Kent, O., is shown by the fact that ten of these machines were sold in Cleveland, O., the first season that it was on the market (1906). The further fact that the purchasers of these mixers saw and thoroughly investigated the machine in operation before buying is evidence that this popularity is due to the merits of the machine and is deserved.

New Book "Opportunities."

We have recently received from the Industrial Department of the Rock Island-Frisco Lines a 160-page book called "Opportunities" which is calculated to be of great service to any manufacturer or business man in search of another location.

This book contains a concise write-up of each town and city along the 13,500 miles of railroad embraced in the Rock Island-Frisco and Chicago & Eastern Illinois lines, and in parallel columns on the same page with the description of the community is given a list of the existing openings for business houses, factories, mills and industries of all kinds.

Many new towns and cities have sprung into life along the large number of newly constructed lines of the Rock Island-Frisco, and particularly in these communities numerous fine openings exist.

Every owner of a quarry, crusher or lime plant interested in changing his location can secure a copy of this book by addressing M. Schulter, industrial commissioner, Rock Island-Frisco Lines, St. Louis, Mo.

Concrete Blocks in Porto Rico.

The use of the concrete block as a building material is fast coming into general use throughout the island of Porto Rico. The Century Cement Machine Company of Rochester, N. Y., manufacturers of the Hercules Cement Block Machine, reports steadily growing sales of its machines in Porto Rico.

F. B. Hatch, a well-known builder of San Juan, operating Hercules machines, has recently completed a number of exceptionally fine concrete block buildings, among them the George O. Robinson Orphanage.

Contracts now under way include numerous churches and apartment houses, while several large warehouses have already been completed for the Porto Rican-American Tobacco Company.

Owing to the high price of lumber the Board of Education has decided to use the concrete block exclusively in the erection of school buildings throughout the island. For the purpose of supplying the stone required at the start several Hercules machines have already been installed and more will be added as they are required.

The J. R. Alsing Company of New York has just finished compiling two new catalogues called Catalogue A and Catalogue B. Catalogue A is already finished and Catalogue B is in the hands of the printer. In Catalogue A the company gives an illustrated description of a large number of different styles of machines which are suitable to reduce anything and therefore useful to all industries wherever materials have to be reduced. It further treats of what is required to dry materials and shows that it is building dryers to suit all requirements. Catalogue B contains illustrated descriptions of such special machines as are used for the reduction of all kinds of ores and minerals and forms a special issue for the cement trade, the mining industry and the grinding of minerals in general. An application for these catalogues sent to the J. R. Alsing Company, 136 Liberty street, New York, will receive prompt attention.

Two of the most modern pumping engines, having a capacity greater than any pumping units ever installed in the rice fields of southwestern Texas for irrigation service, have been built by the Allis Chalmers Company, Milwaukee, and recently shipped to the Trespalacious Rice and Irrigation Company Texas, for installation in the Matagorda rice fields Each unit consists of a horizontal shaft, double suction centrifugal pump, direct connected to a cross compound Corliss engine.

Recent Large Sales of Pulverizers.

The Aero Pulverizer Company, 82 Wall street, New York, has shipped eleven pulverizers for use in the new plant of the Universal Portland Cement Company at the Carnegie Steel Works. These machines have a capacity of 2,000 pounds of coal per hour and will be applied to 120-foot kilns. The Universal Portland Cement Company is among the oldest users of Aero Pulverizers, having had them in use at South Chicago and Buffington, Ill., for several years.

The Aero Pulverizer is designed to reduce coal of any grade without previous drying, to an impalpable powder, and to flot this powder into the kiln intimately mixed with the theoretical requirement of air to produce perfect combustion. The fuel thus delivered to the kiln is instantaneously and completely consumed, burns much like gas and releases all of its heat units.

Flue gases need carry no smoke or unburned carbon, no carbon monoxide and no free oxygen, for the reason that each minute particle of carbon is supplied by the machine with its exact requirement of air under such conditions that perfect oxidation takes place. The air and coal, however, may be proportioned at will so as to produce either a reducing, a neutral or an oxidizing flame when required for chemical reactions. Any kind of coal can be used with equally good and satisfactory results.

The machine runs at such a speed that the finer part of the pulverizing is done by attrition.

It consists of three interiorly communicating chambers of successively increased diameter in which revolve paddles on arms with correspondingly increased radii. These three chambers are in fact three separate pulverizers on a single axle, each succeeding pulverizer having longer arms and therefore greater speed at the periphery, and greater power for fine pulverization. The fourth chamber contains a fan whose function it is to draw the more finely pulverized material successively from one chamber to the other and finally to deliver it through a pipe connection to the furnace under the impetus of a forced draft. The three pulverizers and fan are enclosed in one steel cylinder. A regulable feed device accurately controls, and by moving a lever, varies the quantity of coal admitted to and delivered by the machine.

Two regulable inlets in the feed device admit the air required for pulverizing purposes. An auxiliary inlet between the third work chamber and the fan is controlled by a damper and admits such additional air as is required to bring the total air supply up to the theoretical requirement. The auxiliary air is intimately mixed with the pulverized coal in the fan chamber.

The machine is strongly built and is arranged for easy repair to the parts susceptible to wear, the cost of which is small. The bearings are generous and are self-oiling.

Several sizes of the Aero Pulverizer are made, ranging from 750 to 3,000 pounds capacity per hour and arranged to be driven by belt or directly connected motor.

The Pettyjohn Company of Terre Haute, Ind., has just issued a new edition of its "Stone Making" catalogue, which is said to be the most complete and up-to-date booklet of its kind ever published. In addition to an elaborate description of a full line of concrete moulding machines and appliances, it contains much information of vital interest to any manufacturer of concrete products. It may be had by simply addressing the Pettyjohn Company, North Sixth street, Terre Haute, Ind., but if you will mention this publication your letter may be accorded particular attention.

A company has been formed for the manufacture of concrete blocks by the American Hydraulic System at Hammond, Ind., called the Lake Construction Company. F. G. Frink, professor of engineering at the Universities of Michigan and Illinois, has charge of the plant.

Fan Blast in Cement Burning.

By Max F. Mangelsdorff, B. SC.

The air blast in the burning of cement plays one of the most important parts in its manufacture, although very little has been written about this most important subject.

The blast employed at present in most cement plants is either in the form of compressed air, or that delivered from a rotary fan. Some manufacturers claim that compressed air is the best to use, while others believe that the fan blast gives them the best results. Without any doubt the fan blast is the cheaper of the two; however, either blast must be of sufficient force to blow the pulverized fuel into the kiln.

The air from either of these sources carries the small particles of pulverized fuel through a pipe and into the kiln, where they are ignited, creating a very intense flame by rapid combustion, so much so, that it has been found impracticable to direct this flame other than axially into the kiln, thereby burning the material by a heat radiating flame, instead of by the more effective impinging flame, which is used in the iron, steel, glass and other industries, where an intense heat is required right on the material.

Many experiments have been made in the endeavor to use the impinging flame in the manufacture of cement, but up to the present date all have failed, excepting the Combustion Utilities Company, which is a pioneer of the true impinging flame.

Most all the cement manufacturers realize that the hottest part of the flame is at its center when pulverized fuel was entered into the kiln through a round pipe, and with this knowledge in view they directed it onto the material, and found that it would burn the material faster than when the flame was directed axially, but it would also burn the lining of the kiln very rapidly, so that they had to finally abandon this impinging flame and go back to the more costly and wasteful axial flame.

The Combustion Utilities Company, as stated above, is a pioneer in burning cement successfully with the impinging flame, as with its method they can moderate the temperature to such a degree as to prevent the burning of linings, at the same time burning the material very rapidly and permitting a considerable portion of the flame to help in the calcining of the material, making this more susceptible to the action of the sintering flame.

It is evident from this that a medium different from fresh air has been employed to bring about such a marked and much desired result; this medium practically consists in carbon dioxide. The method employed is to bring the products of combustion taken from the stack and to mix them with the proper proportion of fresh air; this mixture is then drawn into an exhauster and forced through the fuel nozzle and into the kiln. With this air-gas mixture a long or short flame may be produced which can be moderated in its intensity, as stated above, at the will of the burner, but this flame, as used by the Combustion Utilities Company, differs in the additional respect that it is a flat flame; furthermore, the nozzle, to produce this flame, is placed on the opposite side of the material, and is of such a construction as to produce two distinct angles of impingement. The direction of the flame produced by this nozzle near the hood is at an angle of about 45 degrees, while the outer portion of this flame is at an angle of about 60 degrees in relation to the hood, the total flame covering an impinging area of about 25 feet, imparting its intense heat directly to the material. It has also been found a positive preventative of the troublesome cement "ring."

It is well known where rapid combustion takes place, such as with straight air and pulverized fuel, that the material back of this intensely heated flame in the long rotary kiln must depend upon the heat of this combustion to drive off the carbon dioxide contained in the material, also that the temperature reduces very rapidly, due to the heat absorbing action of the material in giving off its carbon dioxide, and in that there are no sustaining properties in the heat developed by this rapid combustion.

On the other hand, if combustion were prolonged it would naturally create a longer flame, and the flame being a mass of intensely heated combustible gas, would naturally have a greater calcining effect on the material in the kiln, driving off a larger portion of carbon dioxide from the material and rendering it easier for clinkering. It is evident from this that with the use of products of combustion properly proportioned, and a properly designed nozzle, a greater output is possible, as well as a decreased coal consumption, for all of the energy in the coal is being used over a greater area.

One of the reasons why the linings of the cement kiln are not destroyed more rapidly where straight air and an axial flame are used is due to the fact that air is being drawn in in the front of the kiln by the stack, this air clinging to the inner surface of the kiln, and acting as an envelope to this intense round flame.

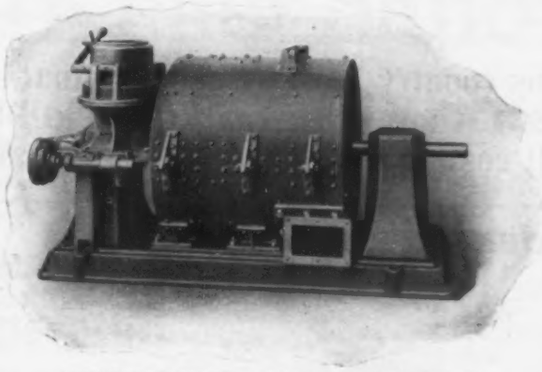
With the flat nozzle all the air for complete combustion is entered through the nozzle, while in the ordinary system only a small proportion of the actual air required is entered, this ranging from 30 to 40 per cent in most plants.

A little explanation on this point may be needful. The majority of plants using fan blast operate under a pressure varying between four to eight ounces per square inch. The opening of the conical shaped nozzle in the fuel feeding apparatus is generally from 2½ to 4 inches; the larger the opening, the lower the pressure. Now, under 4 ounces of pressure there can only be discharged through one square inch of effective area 71 cubic feet of air, while under 8 ounces pressure 100 cubic feet of air may be discharged through one square inch of effective area.

Taking for example a plant using 100 pounds of coal per barrel of cement and turning out 8 barrels per hour, it will take 800 pounds of coal per hour, or 13 3/10 pounds per minute, and assuming 150 cubic feet of air per pound of coal used, we would then need 1,995 cubic feet of air per minute.

As stated above, most nozzles under high pressure are about 2½ to 3 inches. Taking for example a 3-inch pipe, the area of which is 7 inches, and assuming this to operate under 8 ounces, it is evident that we can only discharge 700 cubic feet of air, or a little over one-third of the air actually needed; even assuming this nozzle to be a 4-inch opening, operating under 8-ounce pressure, we could only discharge 1,250 cubic feet of air, not allowing for the loss in friction, which would be at least 10 per cent.

With the Combustion Utilities Company's flat nozzle a double piping system is used, one set supplying most of the air for combustion, and the other set being simply used as a means of forcing the pulverized fuel into the kiln, the two together supplying sufficient air for complete combustion.



THE AERO PULVERIZER AS IT APPEARS IN OPERATION.

AERO PULVERIZER SHOWING THE INTERNAL MECHANISM.

Heidelburg township supervisors have petitioned the county commissioners at Allentown, Pa., for an appropriation for six miles of new road, for which the township certifies that they are ready to pay one-eighth of the expense.

CLASSIFIED ADVERTISEMENTS

Advertisements will be inserted in this section at the following rates:

For one insertion .....25 cents a line
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For three insertions.....60 cents a line

Eight words of ordinary length make one line.
Heading counts as two lines.
No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copies of paper containing the advertisement.

EMPLOYEES WANTED

WANTED.

Six men experienced in hollow block manufacturing; highest wages; no labor troubles. Apply
OHIO CLAY PRODUCT CO.,
605 Diamond Bank Bldg., Pittsburg, Pa. Salineville, Ohio.

MANAGER WANTED.

A man of experience and ability to design and take charge of sales and installations of pulverizing machinery, tube mills, rotary dryers for sand, cement and other kinds of material. Give experience, present employment, salary required. Address
"CONTINENTAL," care ROCK PRODUCTS.

ASSISTANT SUPERINTENDENT.

For plaster mill in the East; competent man, able to handle men in mine and mill, and experienced in the calcining and mixing of stucco, etc.; must send first-class references with application. Address
"F. 2," care ROCK PRODUCTS.

FIFTY QUARRYMEN WANTED.

Wages $1.54 per day, with board and lodging. Excellent locality.
JAMESON LIME CO., Tehachapi, Cal.

MANAGER WANTED.

Experienced and capable man to take the management of a stone quarrying, sawing and crushing plant. An exceptionally fine grade of white limestone for building purposes. Straight salary or salary and percentage of profits to right man. Address
"C. 5," care ROCK PRODUCTS.

FOREMAN WANTED.

Competent and practical to take charge of artificial stone plant doing high class work.
P. O. BOX 223, Albany, N. Y.

EXPERIENCED LIME SALESMAN.

With references, for Virginia, West Virginia, Maryland and Pennsylvania. Apply
"F. 1," care ROCK PRODUCTS.

BUSINESS OPPORTUNITIES

FOR SALE.

One hundred acres of land, capable of producing millions of barrels of high grade Portland cement and lime, situated on main line of Southern Railroad, about fifty miles from St. Paul and Minneapolis, and one hundred miles from head of the Lake cities, Duluth, Superior and Ashland; also by water to all points on the Mississippi to the Gulf. Address
S. J. WALL, St. Croix Falls, Wis.

WANTED.

A partner with capital to develop deposit of Kaolin. Address THOS. S. KNIGHT, Arcadia, Florida.

MACHINERY WANTED

SECOND-HAND MACHINERY.

Wanted, for making or mixing wood fiber and other kinds of wall plaster. Address
"MIXING PLANT," care ROCK PRODUCTS.

MACHINERY FOR SALE

MIXER, ETC.

One Walker & Elliott 4' Double Mixer complete; also one Raymond 6' Air Separating Plant complete; only used a week.
J. H. BAKER, Buckeystown, Md.

CRUSHER FOR SALE.

Good Rodes Machinery Co.'s make No. 4 Champion Crusher, in perfect condition; used very little; no reasonable offer refused.
OHIO CLAY PRODUCT CO.,
605 Diamond Bank Bldg., Pittsburg, Pa.

CRUSHER FOR SALE.

Gates No. 4 Gyratory Rock Crusher, in good order; also engines and boilers. Address R. P., Box 2, Station A, Cincinnati, Ohio.

NO. 2 EMERSON STEAM PUMP.

For sale—First-class condition; used only one month; no further use; listed 415 gallons.
E. B. ALVORD & CO., Jamesville, N. Y.

STONE CRUSHERS, ETC.

Let me send you my May Stock Sheet and Price List, covering Stone Crushers, Channelers, Rock Drills, Compressors, Hoisting Engines, Cableways, Wire Cable, Quarry Cars, Rail, Steam Shovels, Locomotives, etc. Fifteen pages of carefully selected machinery.

WILLIS SHAW,
171 La Salle St., Chicago, Ill.

FOR SALE—SULLIVAN "Z."

Channeling machine; in good running order; complete, with 10 gangs of tools, up to 10 ft.; 30 ft. of section track wrenches, etc., without boiler. Located at and apply to
HOLMESBURG GRANITE CO., Philadelphia, Pa.

PLANT FOR SALE

ALABAMA LIME WORKS.

Operated daily, including 500 acres limestone and timber lands.
LOUISIANA BUSINESS CO., New Orleans, La.

STONE QUARRY FOR SALE.

Fifty-three acres land, 2 houses, stone crusher, etc., five miles south of Burlington, Ia. Good market and prices for crushed stone. Address
"E. G. K.," care ROCK PRODUCTS.

MISCELLANEOUS

MANUFACTURING PROPOSITION.

We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only small investment, and you have exclusive territory protected by patents.
EGYPTIAN SHEET PLASTER CO., Jackson, Mich.

The Concrete Interests of this country have a champion that is accomplishing many progressive measures. Those who read ROCK PRODUCTS lead the procession. It costs but a dollar bill for a whole year.

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J. M. Charles,

Sole Agent.

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Bolting Cloths, Dufour Swiss Silk, Fine Wire Cloth.

Mixing and Sifting Machinery.

Hand Made ═══ Hard Burnt

FIRE BRICK

——are the best for——
Lime and Cement Kilns

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ALL SHAPES St. Louis, Mo. CATALOG

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CHAS. A. MATCHAM, President J. W. FULLER, JR., General Manager H. G. BARNHURST, M. E.

DESIGNING AND CONSTRUCTING ENGINEERS

ANALYTICAL CHEMISTS, REPORTS, EXAMINATIONS AND ANALYSES ON RAW MATERIAL FOR CEMENT

Matcham's Patented Natural Draft Cement Burning System
Matcham's Patented Stone and Clay Dryers, utilizing waste heat
Matcham's Patented Coal Dryer
Matcham's Patented Natural Draft Coolers

WORKS: FULLERTON, PA. CONSULTATIONS SOLICITED OFFICES: ALLENTOWN, PA.

Boyer and Keller Sand Rammers

They are Rapid, Durable, Efficient and Easy to Operate.

Possess Especial Adaptability for Concrete Work

They are Being Rapidly Installed by the Trade.

——WE ALSO MANUFACTURE——

Chicago "Giant" Rock Drills

Special Circular No. 59 and Catalogue 22 Tell all About Them.

Cement Users Should Have our Literature —Write for it

OUR VALVED SAND SIFTERS
ARE IN USE FROM COAST TO COAST.

One machine will handle all the material two men can shovel into it.

═══MANUFACTURED BY═══

CHICAGO PNEUMATIC TOOL CO.

Fisher Building, Chicago Branches Everywhere 95 Liberty Street, New York

Manufacturers of Franklin Air Compressors and a complete line of Pneumatic Tools and Appliances, Duntley Electric Drills Hoists, Grinders and Blowers.

For Real Results

Place Your Announcement in the Advertising Section of ROCK PRODUCTS

GET IN TOUCH WITH THE TRADE

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Rock Products

MEANS MORE BUSINESS

PALMER-ADJUSTABLE

ANY (HOLLOW) SIZE OR SHAPE (SOLID) CONCRETE BUILDING BLOCK MACHINERY

CAST-STONE-PRESS

THE ORIGINAL ADJUSTABLE MOLD PRESS

14 PATENTS TO Noyes F. Palmer — PRESIDENT

NOYES F. PALMER MFG. CO.

BROOKLYN (E.) NEW YORK CITY, U. S. A.

CORE DRILLING

FOR

QUARRY AND MINERAL PROPERTY

I am prepared to make complete investigations and reports. Write for prices.

A. T. THROOP, Consulting Engineer,
NIAGARA FALLS, N. Y.

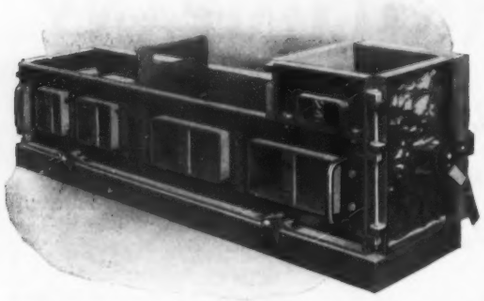
Before placing your order for any of the following articles it will pay you to communicate with the undersigned and secure their prices.

Treads	Urinal Stalls
Risers	Laundry Tubs
Platforms	Sinks
Blackboards	Tiling, Etc.

The Penna. Structural Slate Co.,
ARROW BUILDING, EASTON, PA.

THE PETTYJOHN TANDEM INVINCIBLE

(Face Down Type) **The Greatest of Stone-Making-Money-Making Machines**



THE TANDEM INVINCIBLE—Set up for making one 24-in. L corner and one 16-in. stretcher at one operation.

TWO STONES AT ONE OPERATION.

Forty inches long. Makes two 20-in. stones at one operation, or one 24 and one 16, or any other fractional combination, thus economizing the labor of off-bearing.

THE WET PROCESS.

A wetter mixture may be used on the Invincible than any other machine. Cores withdrawn perpendicularly.

ADJUSTMENTS.

Extremely versatile. Face plates may be used in any part of the face plate holder and be placed horizontally, vertically or perpendicularly.

The Tandem Invincible has been pronounced by every contractor who has seen it to be the greatest block producer and biggest money maker in the field.

OUR "SQUARE DEAL" GUARANTEE.—

The Invincible, like all of the Pettyjohn machines, is guaranteed to give satisfaction or money refunded, and will be shipped on 15 days' trial subject to approval. Price, 40-in. Tandem, $65.00, $150.00, $215.00, according to equipment. Also 8x16x8 Invincible for only $35.00, or $33.25, if cash accompanies the order. Send for our catalog.

The Pettyjohn Company, 614 N. 6th Street, Terre Haute, Ind.

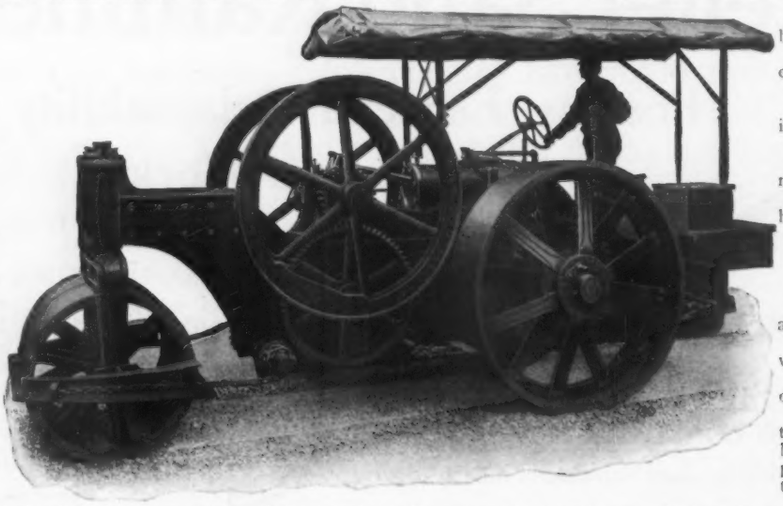
The American Motor Road Roller

The First Motor Road Roller Ever Made in America

AN AMERICAN ROLLER MADE IN AN AMERICAN FACTORY BY AMERICAN WORKING MEN.

Made in Four Sizes:

7 TONS
10 TONS
12 TONS
15 TONS



It can do anything and everything which the very best type of Steam Roller can do.

It can do it more easily, more efficiently, more economically and less objectionably.

It carries out all its operations:

WITHOUT smoke, steam, sparks or soot blowing about.

WITHOUT water.

WITHOUT the expense of teams and men to nish water.

WITHOUT the expense of teams and men to haul coal.

WITHOUT loss of time raising steam.

WITHOUT a specially licensed engineer.

WITHOUT risk of boiler explosion.

WITHOUT laying up for boiler repairs.

It can be operated by gasoline or denaturized alcohol.

It will haul a scarifier, grader, road plow, stone wagon, or portable crusher.

It will furnish power to operate a rock crusher or other machine.

It carries in its own tank enough gasoline to run ten hours on full load, or up to fifteen or twenty hours on lighter load, which saves frequent stoppages for fuel. It can carry with it, on a separate truck, enough gasoline to run it a month.

It uses fuel only during *actual hours it has worked*. There is no fuel and time wasted getting up steam or "banking up fires" over nights. It can start rolling on *one minute's notice*.

It is fitted with an *oil-cooled cylinder* of the latest improved type, such as is used on the most expensive automobiles, *requires no water whatever*. In this device the same oil is used over and over indefinitely. Oil will not freeze and the American Motor Roller can be left out in winter weather without risk of burst pipes, valves, etc.

The start, stop and reverse are controlled by a single lever.

The speed of travel can be varied at will by a slight lever movement, from the slowest motion ever required up to the highest speed that could ever be needed of any roller.

It unquestionably represents the perfection of the art in power road rollers and is a long step in advance of anything that has hitherto been made in this line, either in this country or abroad.

It will rapidly supplant all steam rollers everywhere.

SEND FOR FULLY ILLUSTRATED CATALOGUE TO **THE AUSTIN-WESTERN COMPANY, Ltd., CHICAGO.**

CONCRETE Building Blocks

The Modern "New Process"

Face Down Wet Mixture.

Easily produced with less cement than any other machine.
Water-proof and moisture-proof blocks—Blocks any size.

ONLY machine that will make WET blocks

Prices Reasonable.

Every part protected by patents.
Send for Catalogue.

MODERN CONCRETE MACHINERY CO., 523½ Wabash Ave., TERRE HAUTE, IND.

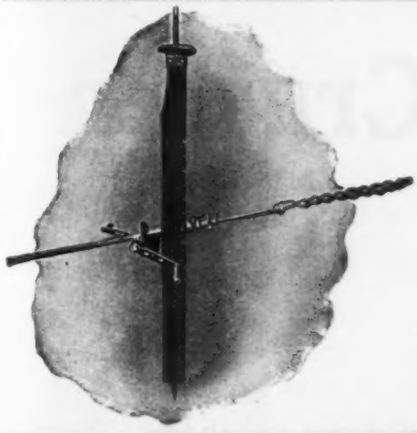
These Beautiful and Useful Concrete

LAWN ORNAMENTS

Sell as fast as you can make them. There is more easy money to be made in their manufacture than you realize.

We have scores of letters from our customers, saying, **"they sell themselves."** Send for catalog of molds for making them. Also a complete line of up-to-date concrete machinery and tools.

Medina Concrete Company,
47 Court Street, - - - MEDINA, OHIO



HOWELL'S Celebrated Ball Bearing Heavy Geared Post Drills

for boring anything that an Auger will penetrate.

Awarded Gold Medal, St. Louis.

We make 40 different styles machines run by Hand, Compressed Air and Electricity for boring Fire Clay, Coal, Rock, Rock Salt, Gypsum and Plaster Rock. Send to day for our handsomely Illustrated Catalogue.

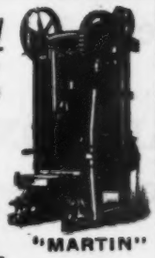
HOWELL MINING DRILL CO., Plymouth, Pa. U. S. A.

(ESTABLISHED 1878.)

Clay Working Machinery

Yard Supplies of all Kinds

CEMENT MIXERS
ELEVATORS
CONVEYORS
DRY PANS
CRUSHERS
BARROWS AND TRUCKS



Steam or Animal Power Brick Machinery

"MARTIN"
DRAWER 807
LANCASTER, PA.

Peirce City White Lime

W. D. MEYER,

Manufacturer of

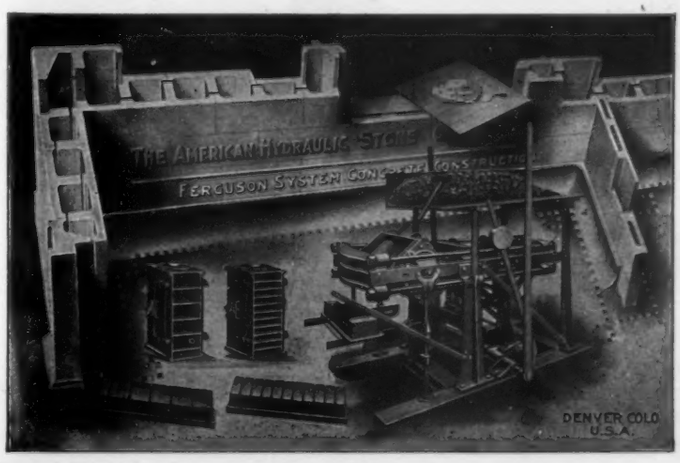
Marble White Lime

115 Delaware Street, QUINCY, ILL.

THE CAPPON PROCESS

(CALCIUM CHLORIDE SYSTEM)
FOR MAKING
Hard Plaster, Artificial Stone and Marble, Etc.
Without the use of gypsum, is of interest to all lime manufacturers
THOMAS W. CAPPON, Patentee,
No. 881 E. 141 Street, NEW YORK.

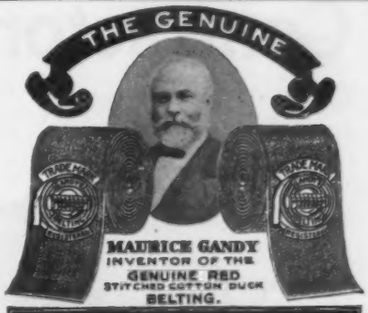
Two-Piece Hollow Concrete Wall and Partition containing Header Bond and Continuous Horizontal Air Space. Impervious to Heat, Cold, Moisture and Sound. Fire and Vermin-Proof. Walls of all widths, blocks of all shapes and sizes. New Hand Press enables three men (mixture supplied) to make 1,200 blocks, 10,000 brick or 5,000 paving blocks in 10 hours. **The Walls of a Cottage are the Work of a Single Day.**



80-Page Catalogue fully illustrated, mailed upon request.

The American Hydraulic Stone Company,

Century Building,
DENVER, COLO.



GANDY

PATENTED 1877

EVER notice our trade mark? Look at it! A coil of belt, bale of cotton and name. That's all. But if you want a belt that will carry brick, clay, rock, sand, etc. without injury to itself and that costs 25 per cent less than rubber and 75 per cent less than leather then insist that this trade mark is on the belt you buy, and you'll be thankful ever afterwards. Catalog?

THE GANDY BELTING CO.
BALTIMORE, MD.

The
New

Symons Gyratory Crusher

LOOK AT IT!

HALF THE HEIGHT, size for size, of other gyratory crushers.
GREATER CRUSHING AREA, Hence
GREATER CAPACITY.
NEVER HEATS. USES LESS OIL. WEARS LONGER.
THINK OF IT and write for catalogue.

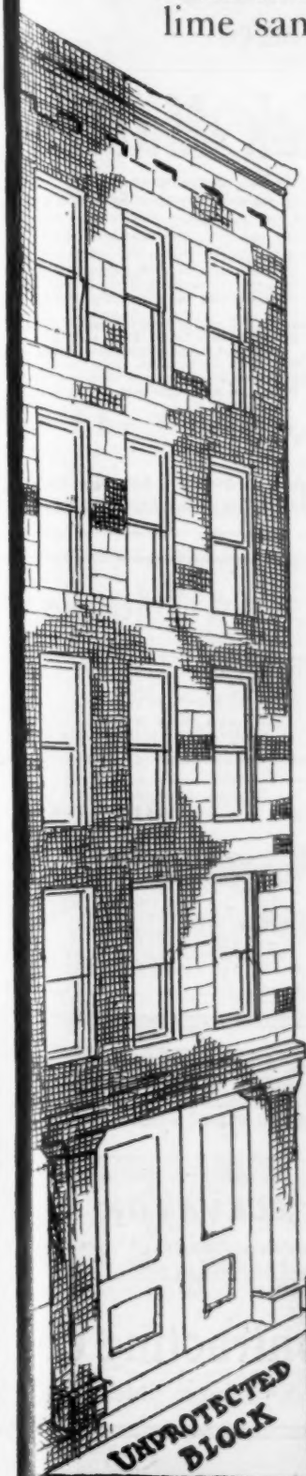
Contractors' Supply & Equipment Co.

Main Office:
305
OLD COLONY
BUILDING
CHICAGO,
ILL.

NODAM-PWALL

The Cheapest and Best Waterproofing

Nodam-Pwall—a Fluid Compound—has been invented, perfected, tried and found not wanting. When employed to subdue the affinity of seasoned cement brick or block and lime sand brick, to not absorb, but shed RAIN WATER.



Why Not Profit

By Producing a Perfectly Satisfactory Waterproofing Compound for your own Work?

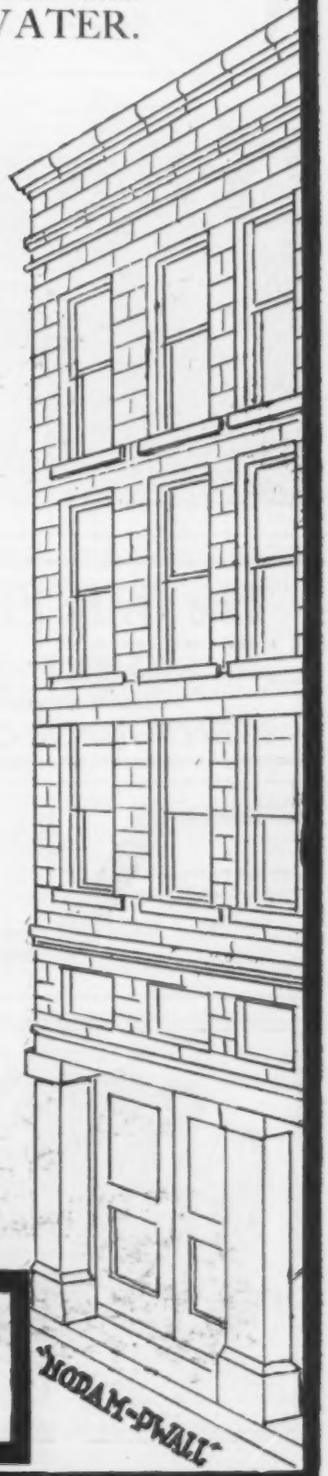
Nodam-Pwall Fluid Compound is composed of ingredients, which every mason, plasterer and stuccoworker handles, some of it often considered worthless and cast away. The cost of one gallon of the Fluid Compound is less than 3 cents, and ready for use as soon as mixed.

The Fluid Compound is non-poisonous, does not cause a visible discoloration, and does not fill up the pores of the cement product (block or brick), but does cause the aluminous atoms of the cement to become immune and to shed rainwater; hence every wallface treated with the Compound becomes more hard and cohesive than the interior of its body, which proves that the Fluid Compound has an analogy to the cement product, as described in the formula.

How to treat cement mortor to avoid the efflorescence of cement blocks or bricks—how to save cement, and how to permanently color cement block or brick, especially sand and lime brick to a yellowish cream color, by saturating the wallface for one second with a watery solution of a mineral salt (the cost per gallon is less than two cents) is told in the formula. The color does not fade, cannot be washed off, and lime or sunheat does not effect the same.

The formula, based on practical experience, can be obtained by advancing Five Dollars, and accepting the stipulations in contract, in which the buyer binds himself with his signature, not to reveal the contents of the formula to any other person, and becomes lawful owner of said formula.

Every architect, builder, cementworker and manufacturer will profit greatly by securing the formula at once. Write us today.



ROESLING CO.

262 S. MAIN ST.

JANESVILLE, WIS.

Peerless Brick Machine, 1907 Model.
Pat'd No. 811518.

The people who use the "Peerless" know its profit making qualities.

We will send you a list of the concerns who have already made money by doing business with us, if you wish.

Make Money

As others have already done it, by making Cement Brick upon a Peerless Brick Machine.

The Price is Right. *The* Brick are Right.

More Peerless Machines now in use producing a profit to the owners than all others combined.

WRITE FOR ILLUSTRATED CATALOGUE.

Peerless Brick Machine Co.,

100 Lumber Exchange, MINNEAPOLIS, MINN.

The Sanders Brick Machine

For making sand and cement brick, sand and lime brick, any brick, all shapes and sizes. This machine makes the finest face brick of any machine on the market; every brick is perfect with fine, smooth face and sharp, square edges, every brick a pressed brick. This machine makes plain brick, ornamental brick, molded brick, all shapes and sizes, building blocks, rock face, tool face, panel face, plain face with V joint and brick face, fancy belt courses, corner blocks, combination brick cornice, fine porch columns, porch piers, lattice work, wall trimmings, chimney tops, paving block, archways, wainscoting and tiling for vestibules and hallways, stair steps and risers figured and paneled, for inside and outside stairs, also many figures in terra cotta work can be made on this machine, and made any color by using the chemical coloring.

Two men can make 4,000 to 6,000 brick a day, 1½ bbls. of cement to 1¼ yds. of sand will make 1,000 good brick; 2 bbls. of cement to 1½ yds. of good, fine sand will make 1,000 fine face brick, style and variety of work unlimited. It pays every time to buy the best machine. With good sand and good cement you only need one of our machines to make the best and finest cement work that can be made. Send for our catalogue in which you will see cuts made from work on this machine—seeing is believing—it is acknowledged by experts to be the best machine on the market for cement work. Be sure that you are right, then buy our machine which makes everything right.

Catalogue Free.

READING BRICK MACHINERY CO., OFFICE: 405 Baer Building, READING, PA.

The Only Fire-Proof Sand for Cement Brick and Blocks

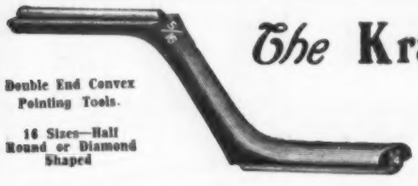
THE IDEAL SAND FOR SAND-LIME BRICK

THE BEST SAND
GLASS MANUFACTURING FOUNDRY PURPOSES
GLASS BEVELING STONE CUTTING
PLASTERING AND CONCRETE

PURE WHITE AND BUFF
99% Pure Silica

THE BEST OF KNOWN CORE SANDS.

KENTUCKY SILICA COMPANY, LOUISVILLE, KY. MINES ON I. C. R. R. AT TIP TOP, KENTUCKY.



Double End Convex Pointing Tools.

16 Sizes—Half Round or Diamond Shaped

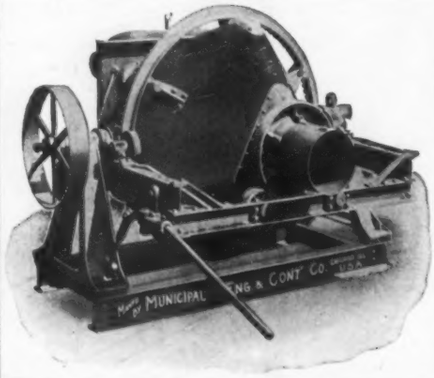
The Kramer Bros. Foundry Co.

DAYTON, OHIO

Largest Manufacturers of Cement Tools in the United States.

SEND FOR CATALOGUE "G"

Double End Concave Beading Tools
16 Sizes—Half Round or V Shape



THE CHICAGO IMPROVED CUBE CONCRETE MIXER

Used by United States Government Reinforced Concrete Commission, St. Louis, for all cement testing purposes. **Only machine provided with AUTOMATIC POWER DUMPING DEVICE which saves labor of one man.**

OUR NEW MIXER CHARGING ELEVATOR

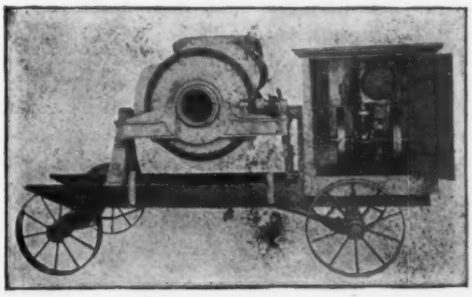
not only **Increases the Capacity** of the mixer from 25 to 50 per cent, but **Absolutely Eliminates** all necessity for the building of any kind of platform or runway, **thereby saving** 75 per cent of time lost in moving from one point to another on the work. Sizes and mountings for every requirement. Write for catalogue No. 16.

Municipal Engineering & Contracting Co.

New York Office, 90 West St. :: 607-611 Railway Exchange, Chicago, Ill.

Tell 'em you saw it in ROCK PRODUCTS.

The "Clover Leaf"



Mixes Uniform Concrete

No matter whether the cement is to be mixed with fine or coarse material or both.

You need not take our word for it, but you must believe what contractors who use our machines say. They get good results and say so. It's results that count.

If you mix concrete the experience of other men in your line is worth money to you. Our catalog reprints a few experiences; we will send it whenever you say so.

ADDRESS

The "Clover Leaf" Company,

SOUTH BEND, INDIANA

THE FLOUR CITY

"Continuous Air Space" Block Machine

HAS NO COMPETITORS, BECAUSE IT MAKES:

An Absolutely Moisture and Fire-Proof Block.
A Wall with Continuous Vertical and Horizontal Air Chamber.
A Block with Rock Face, Panel Face, Brick Face and Broken Ashler Face
Any Degree Angle Blocks, Arches, Water Tables and Fancy Cornice.
The Only Block Having Two Nailing Points Moulded in Every Stone

Will turn out 150 to 200 Blocks, in ten hours with two common men.

Write us to-day for Catalog, Special Proposition, Exclusive Rights, Territory, etc., etc.

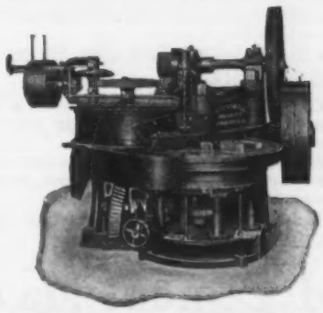
AGENTS WANTED.

THE FLOUR CITY CEMENT BLOCK & MACHINE CO.

701 Sykes Block, MINNEAPOLIS, MINN.

The American Sandstone Brick Machinery Company,

Dept. R. SAGINAW, MICH.



Improved Komnick Rotary Presses are now being built right or left hand, with extra table for making face and fancy brick, on which double pressure is exerted. Our patented rotary brush does the work of one man, and keeps the plunger plates clean.

DON'T confuse our practical system with the so-called Scientific Systems. We have the Practical System, the Practical Machinery, the Practical Press, the Practical Hydration and the Practical Outfit, which is manufactured in our own shops, under the supervision of Practical Men with Practical Experience.

Our Plants are installed under the supervision of practical engineers who know how Sand-Lime Brick should be made, and can be made.

We have practical plants running successfully, to show to prospective investors.

We are Not Scientists.

We produce results, because we are the oldest practical Sand-Lime engineering company doing business in the United States, and we defy contradiction. Incorporated April 1902.

Newsom Crushed Stone and Quarry Company,

MANUFACTURERS OF

Crushed Stone for Ballast, Concrete Work and Roadways, also Concrete Hollow Building Blocks.

Sales Agents for Cement Block and Brick Machinery, Mixers, Portland Cement, Etc.

NASHVILLE, TENNESSEE.

We have built in Nashville SIXTY HOUSES out of CEMENT BLOCK with ONE MAKE OF MACHINE, having used it in preference to ALL OTHERS,—knowing from ACTUAL WORK and EXPERIENCE that it is best suited to the work and MAKES EVERY SIZE, SHAPE and STYLE of blocks used in a building.

Write for Particulars of Our Various Lines.

THE PERFECTION POWER BLOCK MACHINE For Making Hollow Concrete Blocks.

The Only Machine Making Hollow Blocks Under High Pressure.

100 TON PRESSURE ON EVERY BLOCK.

600 TO 1000 BLOCKS PER DAY.

OUR MACHINE MADE THE SAND-LIME BLOCK ON EXHIBITION AT THE SAND-LIME BRICK CONVENTION, DETROIT.
WRITE US FOR FULL PARTICULARS.

THE PERFECTION BLOCK MACHINE CO., Kasota Building, Minneapolis, Minn.

All agreements contingent upon strikes, accidents or other causes beyond our control.
All agreements, contracts and sales must be approved by J.W. SANDERSON, General Manager.

THE UNITED CEMENT MACHINERY MFG. CO. 1906 INC

GENERAL OFFICES & SHOPS - COLUMBUS, OHIO. U.S.A.

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SUCCESSORS TO & MANUFACTURERS
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H. S. PALMER CO. — WASHINGTON, D.C.
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CEMENT MACHINERY MFG. CO. — BURLINGTON, IA.
AND VARIOUS OTHERS

MANUFACTURERS OF
SIDE FACE BLOCK MACHINES, FACE DOWN BLOCK MACHINES, CONCRETE MIXERS, SIDE WALK BLOCK MACHINES, CEMENT BRICK MACHINES, ROOF TILE MACHINES, CEMENT BLOCK CARS, CEMENT TILE MOULDS, CAP AND BALL MOULDS, SPECIAL MOULDS, PNEUMATIC TAMPERS, CAST PALLETS ANY SIZE, BRONZE SIDEWALK TOOLS, NAME STAMPS AND LETTERS, NAME PLATES TO ORDER, WEATHERPROOF COLORS

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In our Warerooms of 33,000 Square Feet Area, we carry 40 different kinds of machines used in the Concrete Block Industry and Associated Work.

We have Hollow Block Machines from $21.00 up, the prices varying according to the outfit and grade. They include the most perfect machines ever produced. Our several types of Concrete Mixers are the best that money will buy.

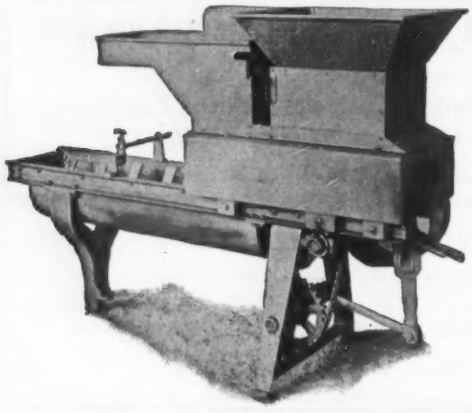
OUR OFFER:—In order that you may carefully examine our complete lines and choose just what you want, **we will gladly pay your railroad expenses** and practically operate any or all of the machines in our demonstrating department, then if we cannot satisfy you fully as to their merit and price **we will pay your fares just the same.**

Or, if you purchase a machine direct we will send a practical demonstrator to start your plant.

Write us to-day for our 80-Page Catalog. Department C.

The United Cement Machinery Manufacturing Co.

Maple and Front Streets — COLUMBUS, OHIO



The Standard Continuous Concrete Mixer

"The Mixer that Measures and Mixes."
"You fill the Hoppers, the Mixer does the rest"

CONTINUOUS, AUTOMATIC, FEED EXACT PROPORTIONS.

Materials first Dry Mixed, then "Tempered." Output instantly variable from 0 to Maximum at will of operator, thus insuring Fresh Material for each Block. Feeds Sand and Gravel Dry or Wet.

Write for description and prices to

The Standard Machine Co.,

KENT, OHIO

CARLON WALL PLUG

for Fastening Interior Work on Brick, Stone or Cement Block Walls

PAT. DEC. 11-1906

The object of this Wall Plug is to provide a cheap, simple and efficient device which can be arranged between building blocks or bricks, during the construction of the wall, and provide a suitable pocket into which the nail or spike may be driven.

It is of such a character that it can be used in connection with either brick or stone, and one that can be used equally as well with artificial or natural stone, but is especially adapted to cement block work. It is made in such a manner that, when once inserted in the wall, all danger of pulling out or working loose is entirely avoided.

For samples, prices or further information, address

CARLON CONSTRUCTION CO. — Oskaloosa, Iowa

RESULTS

Are being secured by Rock Product Advertisers! Let's have YOUR copy for the June issue—YOU will reap results by being represented in the advertising columns.

WRITE TODAY

Undeveloped Stone Deposits.

Some very fine undeveloped stone deposits—limestone, granite and sandstone, are to found found throughout the West and Southwest tributary to the lines of the

Rock Island — FRISCO

Any one seeking a location for a quarry or stone crusher could be accomodated to excellent advantage. Good openings also exist for Lime Kilns and Portland Cement Plants.

Send for a copy of book "OPPORTUNITIES" just published describing all points reached by the Rock Island-Frisco Lines.

M. SCHULTER, Industrial Commissioner,

Rock Island-Frisco Lines, 1144 Frisco Building, ST. LOUIS, MO.

RIGHTLY NAMED

—IS THE—

DEMOREST

Little Giant Mixer

That was the unanimous expression of unbiased opinion at the Chicago Convention—WHY? Let the following speak for itself and remember that the Batch Mixer referred to is one of the best known:

GRAND RAPIDS REFRIGERATOR COMPANY.

Ballou Manufacturing Co., Belding, Mich.

Grand Rapids, Mich., December 19, 1906.

Gentlemen:—We have been using one of your power mixers for the past month and will say that we are greatly pleased with its operation. We are using at the same time an $800.00 machine with steam power. The latter is a batch mixer, and we notice every time the men get a little lazy, they don't put in as much gravel as they ought to, which increases the necessary portions of cement. We also notice that in the operation of the batch mixer, four or five laborers are frequently waiting for the batch to be mixed, thus much time is lost; while with your mixer we can load up the wheelbarrows as they come around.

We are also much pleased with the thoroughness with which the cement is mixed with the gravel. It is a perfect mixture and the proportion of cement and gravel can be regulated to a nicety. If purchasers only realized that your machine is more exact in proportion of gravel and cement than batch mixers as they are usually worked, we do not see why you should not sell all the machines that are needed. We also find a great economy in the fuel expense, the coal for the batch mixer costing $1.00 a day and the gasoline only fifty cents a day. Another economy is in the cost of the engineer. The batch mixer calls for a man at $2.50 a day to shovel coal and attend the engine. Your mixer requires no such expense. It also takes fewer men to shovel the gravel into the machine because they can work steadily, while with the batch mixer they have to wait until the batch is mixed and emptied every time. We figure the saving in labor and fuel at $15 per day over the batch mixer, and they are running side by side, and your machine will make more concrete than the batch mixer.

C. H. L.
H. D.

Very truly yours,
GRAND RAPIDS REFRIGERATOR CO.
(By C. H. Leonard.)

Do You want to save that **$15 a day?**

If so, write for booklet to

BALLOU MFG. CO. 35 High Street, **Belding, Mich.**

ALL MIXES GOOD MIXES

The ordinary mixer cannot be depended upon to produce uniform mixtures. It varies from batch to batch. Sometimes too little concrete is used, but more often too much. Insufficient cement means unsafe work. Too much cement—unnecessary expense.

The **"Eureka"** overcomes these troubles—eliminates them entirely.

Simply set the feeders to the proportion you want, shovel the material into the hopper, and you have a stream of accurately proportioned and perfectly mixed concrete flowing from the mixing barrel continuously.

No stops, no waiting between batches; everybody busy all the time. Less help, less expense.

Every particle of mixed concrete uniform. Capacity dependent upon ability to get material to and from machine. Every **"Eureka"** mixer sold under a positive guarantee.

Ask for Catalogue No. 3.

EUREKA MACHINE CO.

JACKSON, MICH.

The Latest Improvement in Building Material.
A Product in Itself, No Imitation.

"ART MARBLE," "LITHOLITE"

—and—

Concrete Building Blocks.

THE THOMAS
Block and System of Insulated Walls

—combining—

Strength, Durability and Beauty.

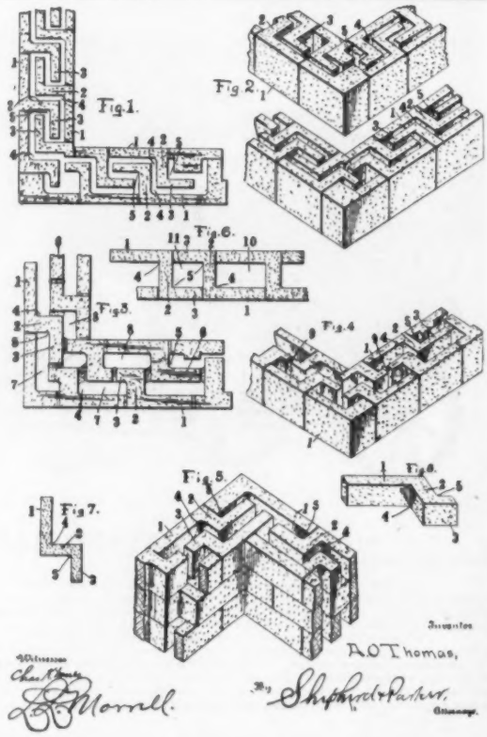
As far superior to common imitation stone as pressed brick is to common, and much cheaper. Our process is based upon scientific principles. Machinery and cost of manufacturing reduced to the minimum.

BLOCKS NON-ABSORPTIVE
WALLS FROST PROOF

AGENTS WANTED

Buy while Introductory Prices are Offered.

Patents fully Cover System.



KNUTZEN & ISDELL, General Agents, Kearney, Neb.

THE ANCHOR CONCRETE STONE MACHINES make the only continuous Air Space Block—Make the only Frost and Moisture Proof Block—Make all Blocks on the same Wooden Pallet.

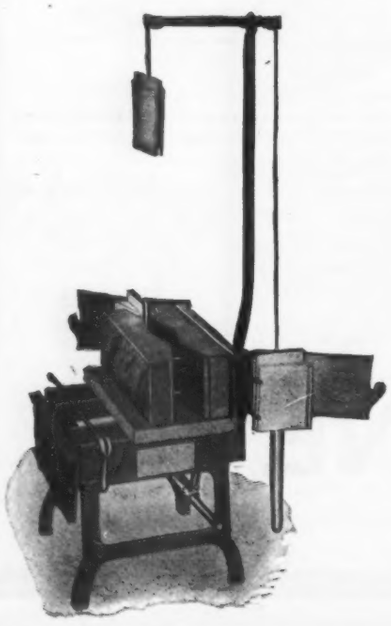
Fully Protected by Patents

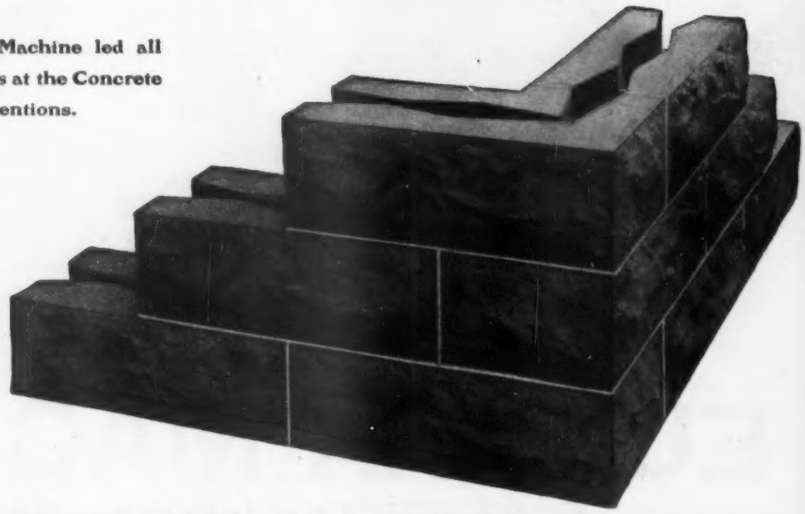
GALVANIZED ANCHOR, exact size

Fully Protected by Patents

Make Blocks 8 to 16 inches wide without changing Plates or Pallets

Our Machine led all others at the Concrete Conventions.





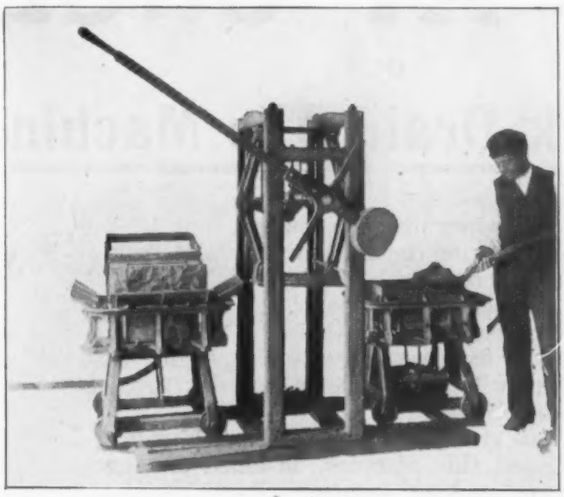
Write for Catalogue "B" and Prices

ANCHOR CONCRETE STONE CO.

Eastern Agency, 1 Madison Ave., New York City, Albert Oliver, Mgr.

Rock Rapids, Iowa.

Somers' Pressure Block Machine



You are looking for the machine that will make you the most money. Our sales are principally to persons who have started into the business and have learned just enough about the great possibilities of the block business to be convinced that if they can get a machine that is speedy and at the same time one that will make any block the architect may call for, their financial success is assured.

The Somers' Machine will do it. 3 cents saved in labor on every block because of its great speed. Two machines operated successfully under one Press, thereby doubling the capacity. Operated automatically by levers. More moderate in price than the common Hand Tamp outfits. **Write for our Catalogue and prices.**

Somers Bros., Manufacturers

205 North Coler Ave., - Urbana, Ill.

Concrete Houses are Beautiful

SWEETWATER, TEX., SEPT. 24, 1906.
E. G. KEMPER:—Your monolithic system of construction makes a beautiful building and is all right and bound to increase in use as it is seen and understood.
R. C. CRANE, Mayor.

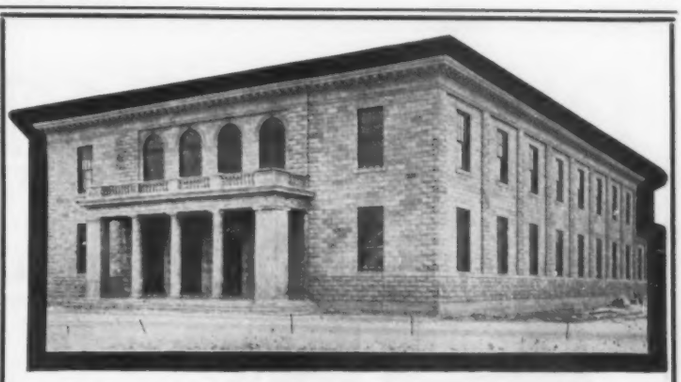
MENA, ARK., DEC. 4, 1905.
E. G. KEMPER:—You have the greatest invention of the age. Plates are very light, quick and easy to handle.
WM. M. PALMER.

DALLAS, TEX., OCT. 5, 1906.
E. G. KEMPER:—The passenger depot at Sweetwater, Texas, built with your steel plates has proven to be very attractive as well as substantial. Your system requires but a small fraction of lumber over the old way of making forms. Wishing you success, I am yours very truly, B. S. WATHAM, Chief Engineer T. & P. R. R.

PLATES RENTED AND EXCLUSIVE TERRITORY GIVEN

E. G. KEMPER,

Wheeling, W. Va. Burlington, Iowa. Dallas, Tex.



RESTAURANT BUILDING OF THE GENERAL ELECTRIC CO., SCHENECTADY, N. Y.

Hercules Concrete Block Machine

If you are interested in Real Concrete Block Machines write for our Catalog today.

You won't know what a real Concrete Block Machine is until you have read the Hercules 1907 Catalog.

To attempt to describe the marvelous performance of the simply built Hercules in this space would be ridiculous.

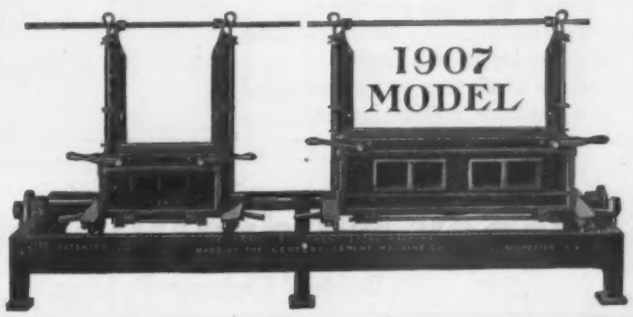
It is the strongest, simplest, fastest machine in the world—it makes sills, water tables, lintels, cornices, steps, etc.

No bolts, pins, chains or springs in the Hercules, it makes two blocks at one time, thus doubling capacity; it makes blocks ranging in size from two inches to six feet in length. The Hercules is the standard of excellence in every civilized country; it was chosen for Government work in Porto Rico, and by the British Government for massive buildings in Egypt.

Send for Catalog L.

Century Cement Machine Co.

179 West Main Street ROCHESTER, N. Y.



INVESTIGATE AT ONCE

OUR

Schenk Drain Tile Machine

This is a power machine, the only one in existence, making cement drain tile. It makes seven different sizes of tile, 4, 5, 6, 7, 8, 10 and 12 inches in diameter, 12¼ inches long, making just sixteen to the rod. With the aid of four or five men and a 10 h. p. engine this machine will make 3,000 in one day, any of the above sizes.

Let us give you names of parties who investigated this machine, installed one, and are now making money.

For further information write

The Cement Tile Machinery Co.

WATERLOO, IOWA

MANUFACTURERS AND JOBBERS OF CEMENT WORKING MACHINERY

Fisher Hydraulic Stone Machinery

Is the only Machinery Perfected for making True Concrete Stone.

HYRAULIC POWER SYSTEM.

A 200 Ton pounding, tamping pressure, uniformly applied.

Condenses the concrete 30%.

Same density from center to surface.

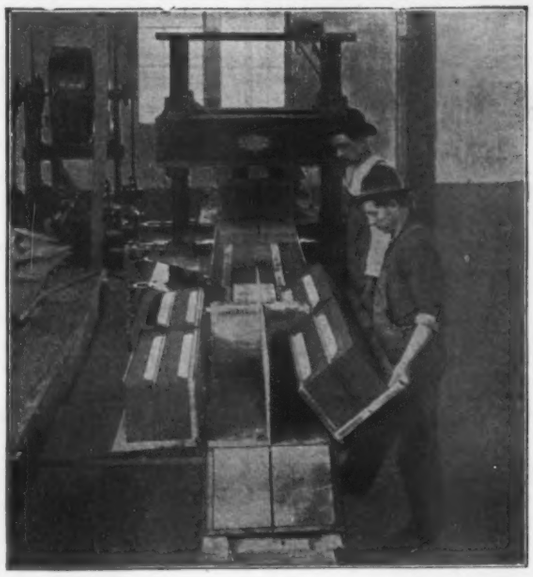
Allows the use of **sufficient water** to make a **plastic mix.**

Cement thoroughly crystallized.

These conditions produce **true stone** of great **density** and **strength.**

Stone of **all sizes** and **shapes** within dimensions 68x18x9 inches.

ASK FOR CATALOGUE "R"



Turns out from 1500 to 3000 cubic feet of stone per day.

Solves the **problem** of producing a **high grade, reliable building material** at moderate cost.

The demand is constantly **increasing**

Lumber will soon be **exhausted.**

Cut stone is generally too **expensive.**

True Concrete Stone will soon be used as extensively for **building** as it is now used for **paving.**

By-products of **quarries**, mines, furnaces, etc., utilized.

INVESTIGATE NOW.
ASK FOR CATALOGUE "R"

Complete operating exhibit at Convention of National Association of Cement Users, Chicago, January 7 to 12, 1907.

Fisher Hydraulic Stone & Machinery Co.

Builders' Exchange Building, :: BALTIMORE, MARYLAND

THE CHICAGO CONCRETE MIXER

STEAM OUTFIT

EFFICIENT—SIMPLE—DURABLE

Why dump the Mixed Concrete on the ground and then shovel into wheelbarrows **when you can dump direct into barrows with the Chicago Mixer?**

It is the only Batch Mixer that can dump into wheelbarrows successfully, saving time and expense. Your wheelmen take their load themselves. It does not require an extra man to dump the Mixer.

The material is thrown back and forth and rolled over and over 100 times per minute.

The **Chicago Concrete Mixer** is lower on the charging side than other mixers. It is also lighter.

The Mixer does not have to be stopped for either loading or discharging.

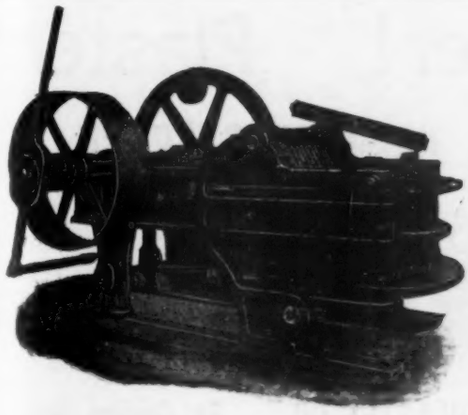
We equip our Mixers with **Steam or Gasoline Engine and Motor Power—on Trucks or Skids.**

Send for our catalogue which explains **why it is the best all round Mixer on the market.**

CHICAGO CONCRETE MACHINERY CO., 20 SO. CANAL ST., CHICAGO, ILL.

REPRESENTATIVES OF THE CHICAGO CONCRETE MIXER.

Beall & Co., 321 Hawthorne Ave., Portland, Ore., Northwestern Representatives.
A. L. Young Machinery Co., 319 Howard St., San Francisco, Cal., Southwestern Representatives.
Western Mining Supply Co., Butte, Mont.
J. Peyton Hunter, Dallas, Texas.
Allen P. Ely Co., Omaha, Neb.
Robinson & Cary Co., St. Paul, Minn.
C. E. Robidoux, 1012 Chemical Bldg., St. Louis, Mo.
Thos. Cox & Son, Little Rock, Ark.
F. Codman Ford, New Orleans, La.
G. B. Elliott, 805 Majestic Bldg., Detroit, Mich.
Indiana Road Machine Co., Ft. Wayne, Ind., Cincinnati, Louisville, Nashville.
Cleveland Builders Supply Co., Cleveland, Ohio.
Keith-Simmons Co., Nashville, Tenn.
American Mfg Co., Atlanta, Ga.
New York Concrete Machinery & Supply Co., 78-80 Murray St., New York, Eastern Representatives.
Iowa Machinery & Supply Co., Des Moines, Iowa.
James Sullivan, Appleton, Wis.
Smith-Courtney Co., Richmond, Va.
Carlin Machinery & Supply Co., Allegheny, Pa.
C. P. Hutchinson, Salt Lake City.



CRUSHERS

for soft rocks, burnt lime, etc.

GYPSUM MACHINERY.

We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting etc.

SPECIAL CRUSHER-GRINDERS FOR LIME HYDRATORS.

BUTTERWORTH & LOWE

17 Huron Street, GRAND RAPIDS, MICH.

Gypsum Machinery

A fine and complete line of Modern Machinery.

KETTLES, CRUSHERS, NIPPERS, ETC.

We are now building the new Plymouth Mill at Fort Dodge, Iowa, the finest mill in the United States.

ASK FOR CATALOGUE.

Des Moines Manufacturing and Supply Company

DES MOINES, IOWA.

Tell 'em you saw it in ROCK PRODUCTS.

KING'S WINDSOR CEMENT
FOR PLASTERING WALLS AND CEILINGS

Elastic in its nature, can be applied with 25 per cent. less labor and has 12½ per cent. more covering capacity than any other similar material.

Buffalo Branch: CHAS. C. CALKINS, Manager
322 W. Genesee Street

J. B. KING & CO., No. 1 Broadway, New York

SPECIAL MACHINERY AND FORMULAS
FOR THE MANUFACTURE OF
WOOD FIBER PLASTER, FIRE PROOFING AND KINDRED PRODUCTS
The Ohio Fiber Machinery Co.

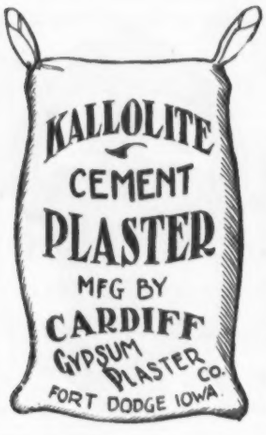
We furnish the latest improved FIBER MACHINE, (fully patented), also FORMULAS, on a reasonable proposition. The strongest companies and oldest manufacturers are operating under my contracts.
WRITE FOR TERRITORY.
J. W. VOGLESONG, GENERAL MANAGER.
Elyria, Ohio.

WHEELING WALL PLASTER CO.,
MANUFACTURERS AND JOBBERS
Wheeling Plaster and Builders Supplies.
WHEELING, - - WEST VIRGINIA.

The American Cement Plaster Co.
Make Plaster that Gives Satisfaction.
Try a car and be convinced
We have six mills and can always fill orders
Main Office: Laurance, Kansas.

DRYERS
OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES.
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

The Sheridan Stucco Retarder Co. Toledo, O.
MANUFACTURERS OF
STUCCO RETARDER
Quality, Price, Shipping Facilities, and Prompt Attention, Unexcelled by any. Drop us a line for Prices.



KALLOLITE CEMENT PLASTER
IS MANUFACTURED FROM THE PUREST GYPSUM ROCK FOUND IN THE UNITED STATES AS SHOWN BY GOVERNMENT REPORT.
CARDIFF GYPSUM PLASTER CO.
MANUFACTURERS FORT DODGE, IOWA

Plaster! Plaster!
IOWA HARD PLASTER CO.
HARD BY NAME
HARD BY NATURE
HARD TO BEAT
NOT HARD TO GET
IOWA HARD PLASTER CO., Ft. Dodge, Iowa.

Empire Gypsum Co.

The Empire Gypsum Company's new mill, with capacity of 200 tons daily, is in operation and they are prepared to promptly furnish the best quality of Empire Stucco, Empire Neat Plaster, Sterling Wood Fiber Wall Plaster and Excelsior Wall Plaster Sanded.

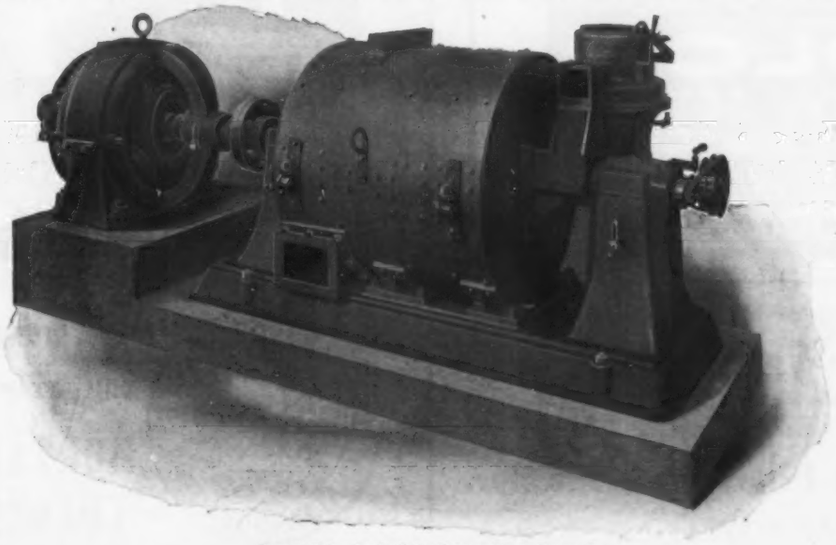
Garbutt, Monroe County, New York.

Tell 'em you saw it in ROCK PRODUCTS.

THE AERO PULVERIZER IS A COMPLETE PLANT
FOR PULVERIZING AND FEEDING COAL TO CEMENT KILNS

No Dryer
No Tube Mill
No Coal House
No Storage
No Danger

WRITE FOR PRICES



Type D. Pulverizer Built for Universal Port. Cement Co.

Saves Space
Saves Power
Saves Labor
Saves Coal
Saves in First Cost

SEND FOR CIRCULARS

THE AERO PULVERIZER CO., 82 Wall Street, NEW YORK.

QUALITY STRENGTH RELIABILITY QUALITY STRENGTH RELIABILITY QUALITY

Does Quality Appeal to You?
Does Prompt Service Appeal to You?
Does Reliability Appeal to You?

Then Buy

Your Stucco and Wall Plasters of

The American Gypsum Co.,

Manufacturers of

High Grade Stucco. "Anchor" Cement Plaster.
"Anchor" Wood Fibre Plaster.
Superfine Calcined Plaster.

General Offices, Garfield Building, CLEVELAND, OHIO.
Mills, Port Clinton, Ohio

HIGHEST AWARD
ST. LOUIS EXPOSITION
1904.

RED, BROWN,
BUFF, PURPLE,
BLACK.

For Brick, Mortar, Cement, Stone, etc.

The RICKETSON MINERAL COLORS
COLOR
QUESTION SETTLED

FOR QUALITY AND STRENGTH
WE LEAD.

RICKETSON MINERAL PAINT WORKS, Milwaukee, Wis.

H. L. Graf, Pres. E. T. Slider, Vice-Pres. & Gen'l Mgr. Osborne G. Reilly, Sec. & Treas.

New Albany Wall Plaster Co.
(Incorporated.)

MANUFACTURERS OF

Star and Wood Fiber Wall Plaster.

NEW ALBANY, IND.

We wish to announce to the trade that we are now running and at the present time, are in position to fill all orders promptly. Those who have used our goods claim it is the finest they ever had.

If you have not tried it, we are sure it would be to your interest to do so.

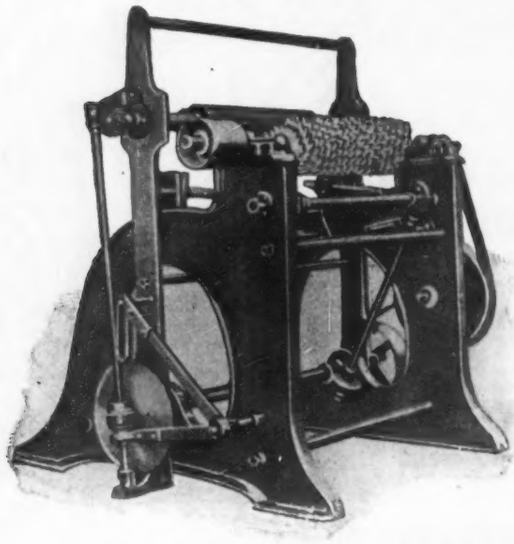
Prices always right and your orders solicited.

NEW ALBANY WALL PLASTER CO.,

Cumberland Phone 408.
Home Phone 137.

NEW ALBANY, IND.

"The Cochran" Automatic Wood Fibre Machine
(PATENTS PENDING)



There is positively nothing **cheap** or **shoddy** about this machine, either in **workmanship** or material.

There are no **Sprocket Wheels** or **Chains**, no **Cone Pulleys** or **Cog Wheels** to break, get out of order and cause trouble. All the power is transmitted with **bevel gears** adjusted to "**run like a watch.**"

We call special attention to the "**speed increasing mechanism**" and **automatic** action of our machine. When the log is reduced to the size of 2 inches the carriage is automatically released, and **swings back to place without being touched by the operator**, while at the same time the log **stops revolving**, without interfering with the other parts of the machine.

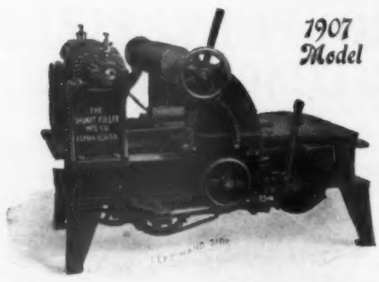
The log when finished is revolving **six times as fast as at the start** and all done **automatically** and **continuously**.

Write for catalogue and prices to

Concrete Engineering and Equipment Co.

Butler, Pa. Greensboro, N. C.

The Leonard Wood Fiber Machine



1907 Model

Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines. Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.
Successors to
The Elyria Machine Works,
Elyria, Ohio

THE SHUART-FULLER MFG. CO., Elyria, Ohio

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn

CHATTANOOGA PAINT CO. MORTAR ECLIPSE COLORS CHATTANOOGA, TENN.

Red, Brown, Buff and Black
MORTAR COLORS

CHATTANOOGA PAINT CO. STANDARD LOWES PAINT. CHATTANOOGA, TENN.

The Strongest and Most Economical in the Market.

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO., CHATTANOOGA, TENNESSEE.

CUMMER CONTINUOUS PROCESS
FOR
CALCINING
GYPSUM

NO KETTLES USED

PLANTS IN OPERATION

Great Saving in Cost of Manufacture and Quality of Product Guaranteed.

The F. D. CUMMER & SON CO., Cleveland, O.

THAT'S IT

PLYMOUTH Cement Plaster
Wood Fiber Plaster

The Brand that's Made from Pure Gypsum Rock.

Correspondence Solicited.

MANUFACTURED BY

The Plymouth Gypsum Co.

FORT DODGE, IOWA

Just A Moment Please!

This Message May Belong to You!

It is directed to two individuals—the Material Dealer who has not yet heard of "Universal"—and the one who **has,** but does not as yet fully appreciate what "Universal" is—what it means to **him.**

THE MESSAGE IS A DIRECT OFFER of something really new—of increased sales—more **net** profit—less trouble, and more selling satisfaction generally—as one dealer aptly puts it—"The most **interesting** plaster item we have ever handled"—

"UNIVERSAL"

The New Plaster Finish Without Lime and Without Lime Troubles

Ready to Use—no slaking delays, no losses in stock and in handling—**easiest working** plaster finish ever made—incomparably hard and smooth finish—remarkable durability—**protection** to decorations—really and truly **"A finish without a fault."**

THE MESSAGE IN FULL is contained in the "Universal" literature which we are ready and willing to send you—and through you to your trade if you will accept our co-operation—an unusually good advertising campaign to assist you in making a good thing "go" right from the jump.

Taking on "Universal" is **almost** "like finding money." If this message belongs to **you,** Mr. Material Dealer—

We Want to Send You this Little Book

entitled "Here's Your Finish"—which gives the story in a nutshell. It is brief, bright and attractive, **very** readable and bristles with **real information.** It is the kind of literature you would like to send out to your trade—and is an earnest of the up-to-date **co-operative service** enjoyed by dealers who handle U. S. G. products.

TAKE THE MESSAGE! Cut out the coupon below, inserting your name and address as indicated—and we will send you the little book by return mail. We urge you to do it promptly—for it's more than worth your while to get acquainted quickly with "Universal." Address our nearest office.

United States Gypsum Company

Chicago **Cleveland** **Minneapolis**

May _____ *1907.*

UNITED STATES GYPSUM COMPANY,
Chicago:

Gentlemen:—

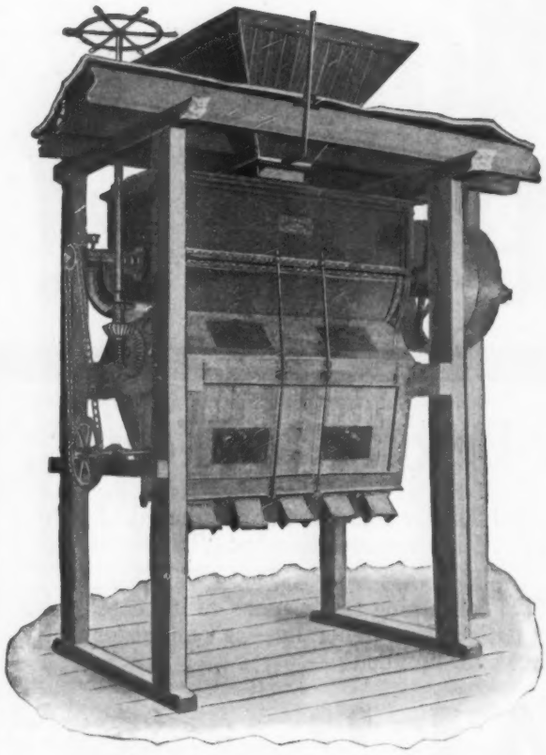
We are willing to hear what you may have to say further concerning "Universal." **Send us a copy of "Here's Your Finish."**

Name _____ *Material Dealer*

(Mention Your Line) _____

Address _____

_____



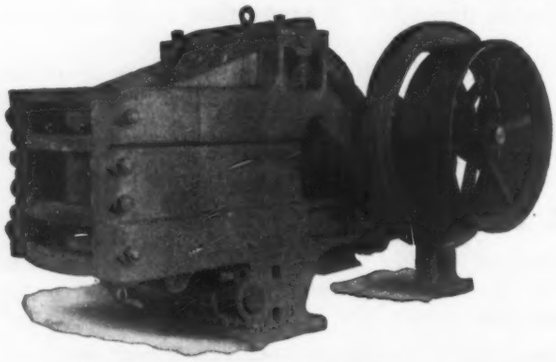
ENTERPRISE PLASTER MIXER

NOISELESS,
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and Retarder with Dry Plastering Materials.

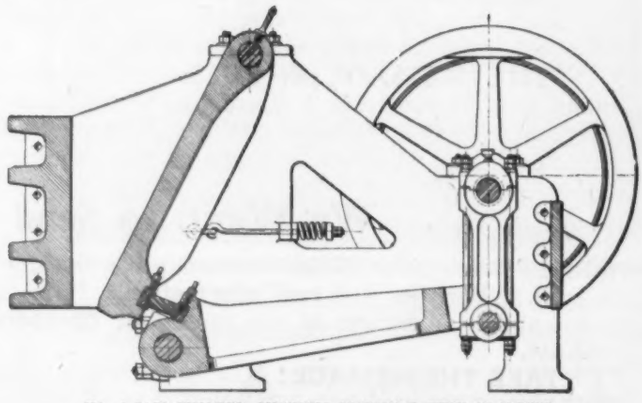
Calcining Kettles

Jaw and Rotary Crushers for Gypsum, Reels, Vibratory Screens, Hair Pickers and Transmission for applying power.



EHRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



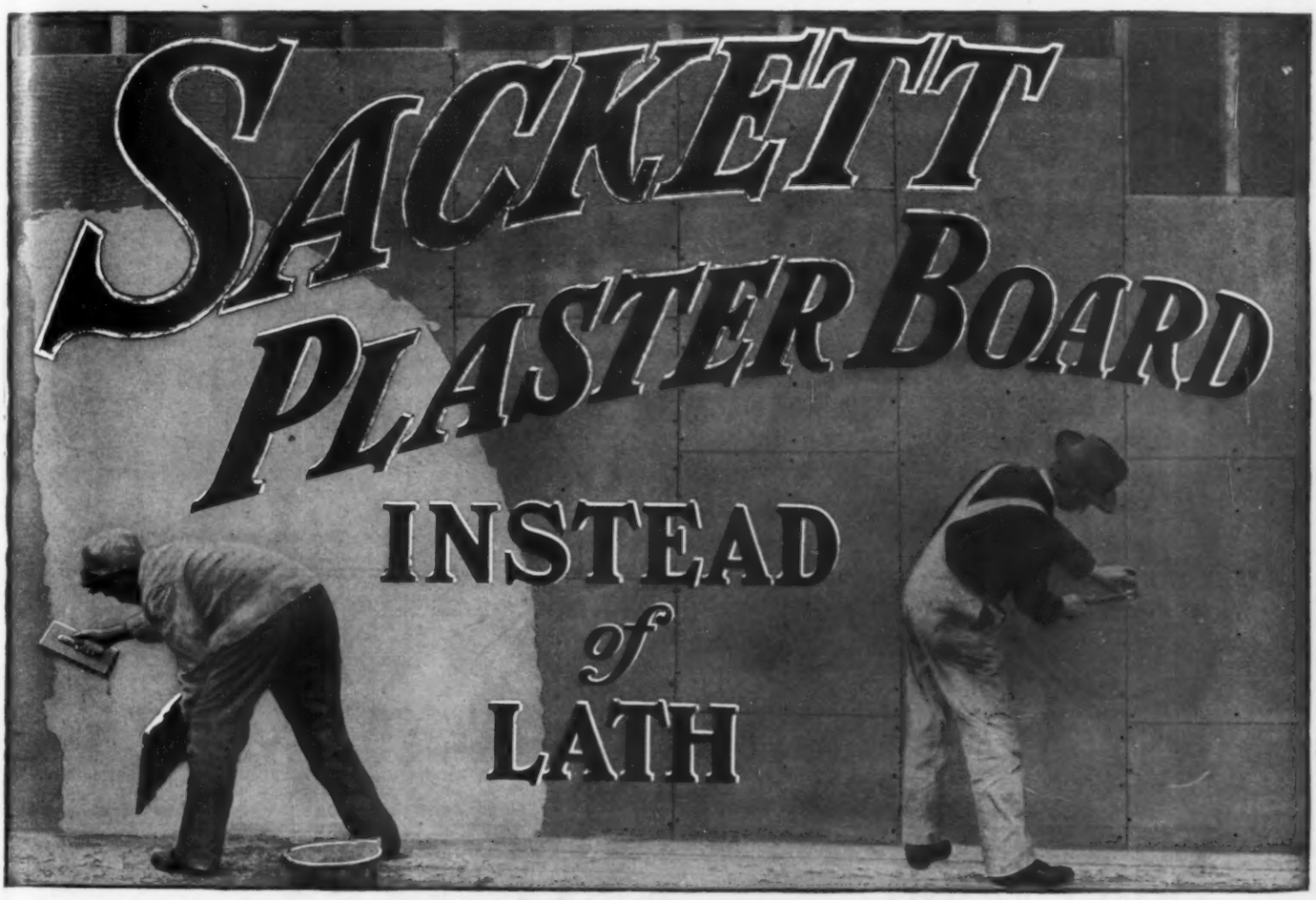
NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

The J. B. Ehrsam & Sons Mfg. Co.,

BUILDERS OF

COMPLETE EQUIPMENTS FOR PLASTER MILLS

Enterprise, Kansas



FIREPROOF AND ECONOMICAL

SACKETT PLASTER BOARDS have been successfully used since 1891 in thousands of buildings of all classes, including small cottages, prominent hotels, costly residences, churches and theatres.

Walls and ceilings of Sackett Plaster Boards will be **DRY AND READY IN HALF THE TIME** required when lath is used, as less than half the quantity of water is needed.

Less moisture means **less damage** from warped and twisted trim and woodwork.

Their superior insulating qualities make warmer houses with less fuel. The first cost is **no more** than good work on wood lath, and **less** than on metal lath.

Sackett Plaster Board is an efficient and economical FIREPROOFING, not only for walls but between floors, and for protecting exposed wooden surfaces in mills, warehouses and industrial structures. It is also used extensively instead of lumber as outside sheathing under weather boards.

Sackett Plaster Board, comes in sheets or slabs 32 x 36 inches, ready to be nailed direct to the studding, furring or beams.

For all kinds of Buildings its use is ideal. It speeds construction; it lessens building cost; it reduces fixed charges for insurance; it makes fire resisting walls and ceilings, and gives absolute satisfaction.

Carried in stock by **up-to-date building material dealers** everywhere.

BOOKLET showing buildings all over the country where these boards have been successfully used with SAMPLES and name of nearest dealer, furnished on application to any of the following General Distributers.

UNITED STATES GYPSUM COMPANY,
CLEVELAND, CHICAGO, MINNEAPOLIS

GRAND RAPIDS PLASTER COMPANY,
GRAND RAPIDS, MICHIGAN

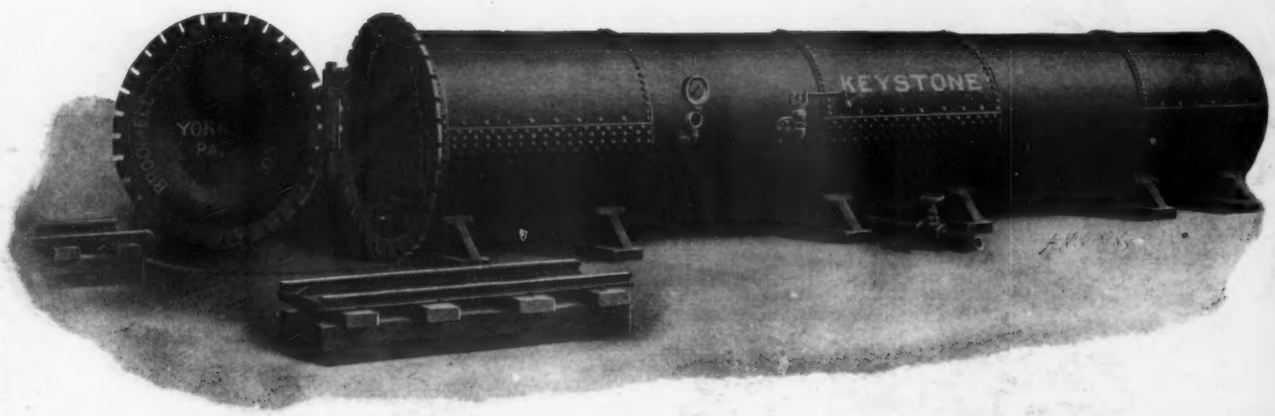
SACKETT PLASTER BOARD COMPANY,
17 BATTERY PLACE, NEW YORK CITY

HOTEL GRISWOLD, NEW LONDON—14½ acres of Sackett Plaster Board used in its construction.
R. W. GIBSON, ARCHITECT.

Sand-Lime Brick Hardening Cylinders

BINS, ELEVATORS, CARS, HYDRATING MACHINES.

SPECIAL WORK OF ANY KIND BUILT FROM BLUE PRINTS.



BROOMELL, SCHMIDT & STEACY CO., YORK, PA.

Sand-Lime Brick Machinery

Our Sand-Lime Brick Machinery is at least a little better than any other. We have testimonials to show it. We build it all in our own factory and are sure of its quality. We are the only firm doing this. We will design and equip your entire plant or will sell you parts of your equipment. Our catalog describing and illustrating our full line will be sent upon request.

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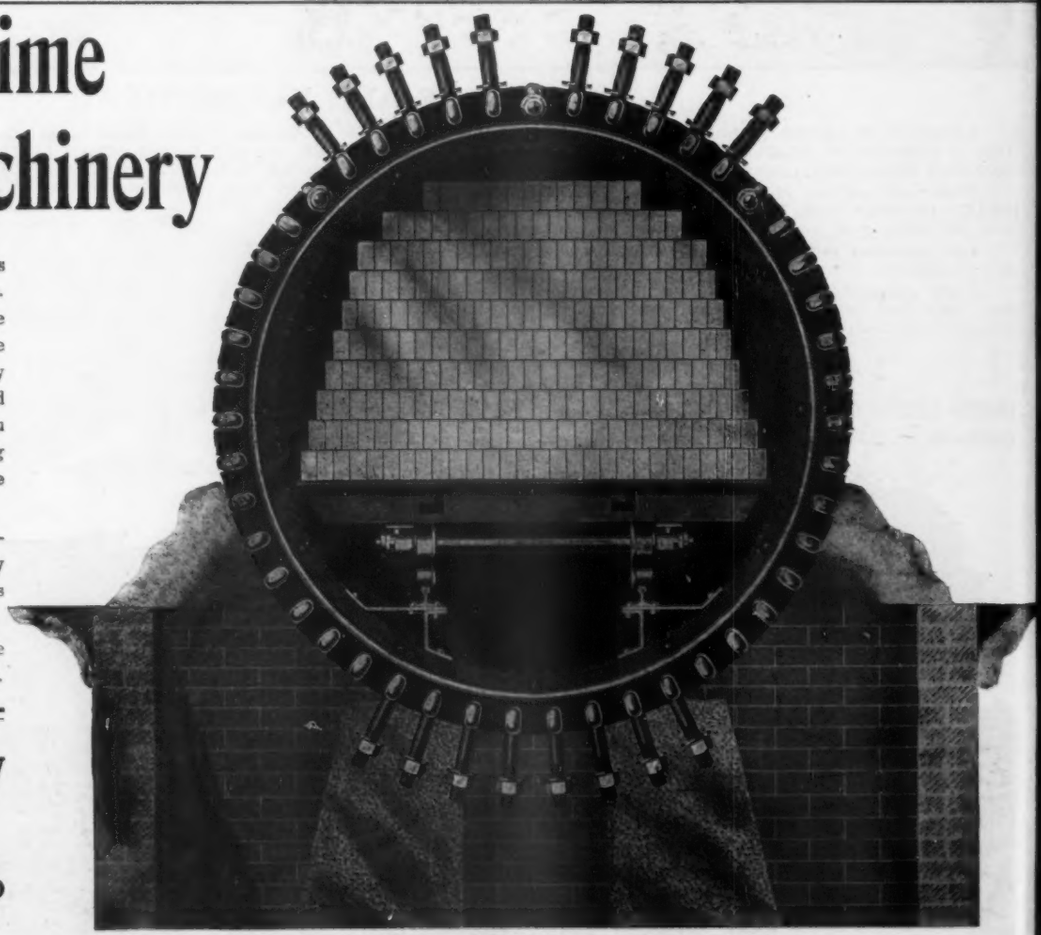

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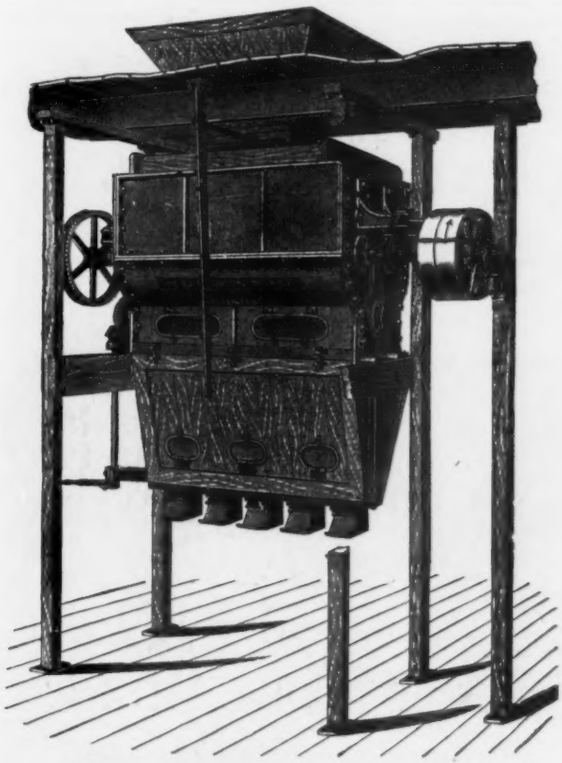

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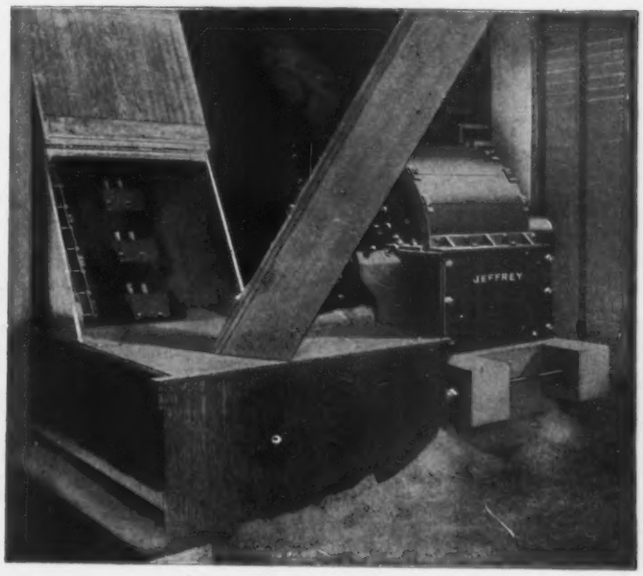

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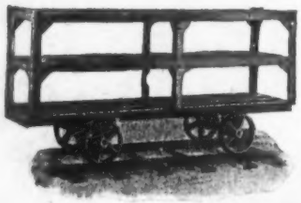

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